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PRACTICAL EDUCATION.

PAPER READ AT THE ESSEX COUNTY TEACHERS' ASSOCIATION
MEETING, HELD AT SALEM, APRIL 12, 1878,

— BY —

WALTER SMITH,
ART MASTER, SOUTH KENSINGTON, ENGLAND.

*Director of Drawing in the City of Boston Public Schools, and State Director
of Art Education in Massachusetts.*

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PRACTICAL EDUCATION.

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BY

WALTER SMITH.

In the present and recent times there has been, and is, great uneasiness felt by the friends and foes of education upon the question of whether we are giving our children such instruction as will best fit them for practical life; in other words, the best practical education.

The subject is of the highest interest to us all, whether as parents, teachers or citizens, in one capacity or in all, and when we share this interest in all three capacities, it becomes somewhat exciting; for then we have as parents to incur the responsibility of having our children prepared for practical life, as teachers the responsibility of administering this education, and as citizens the responsibility of paying for it.

Many of us here to-day have this threefold interest in the matter, some have a double share, and all have at least one right to be heard and to vote in discussing and deciding it.

So, as a competent jury, let us take counsel together concerning the best practical education that could be given in our common schools. It will be recognized without discussion, by everyone who maintains a careful outlook over the whole educational field, that the leaders and followers, the pioneers and the hangers on behind, school committee-men, school superintendents and supervisors, head teachers and the rank and file beneath them, parents, tax-payers and the conductors of the public press, are all in a very restless and uneasy condition just now about the efficiency of the education given in our public schools. People who are utterly unfit to form an opinion or give judgment concerning the subject, are as anxious to discuss and be heard upon it as those whose long experience and mature judgment would give them the right to be considered authorities, if any authority in education were recognized here. Remembering this general interest in the matter, and the need that something should be done to allay this restlessness and give peace to this spirit of enquiry and discontent, I claim it to be the duty of teachers to participate in the discussion, to give their fellow citizens the benefit of their experience and knowledge about it, to bear a hand in the navigation of this ship called Education, as part of the crew, and *not* as passengers or as freight; just as in times of political danger every citizen, without distinction of sex, should consider it a duty to be counted in the ballot-box, a duty greater even than that of being heard in the caucus.

And I feel moved to say this because it is noticeable in this age and in this country, that if an able man should decline or abandon the practice of a profession, to follow what is called the vocation of a teacher (a most unusual occurrence), he thereby reduces his social influence by many degrees, because his manly independence has declined almost to zero — he has become the servant of servants.

When one thinks of the mighty interests the educators of the human race hold in their hands, and how necessary it is for the good of society that the biggest brains and the ablest hands should direct and hold the reins of education, it is somewhat sorrowful to see how few men, possessing these highest qualifications, can be induced to remain in the public service for education, even when they have begun life as teachers. *Annual elections* of teachers are responsible for this, a childish political dissipation, which takes the bright manliness out of our men and the happy independence out of our women, if they happen to be teachers; for through it those who seriously undertake a life-long duty have the same uncertainty of tenure in office as the small log-rolling politicians who are hungry for a year's notoriety, and get it.

I have formed a very high opinion of the capacities and abilities of American teachers, and think it is a great blessing for society that the lifelong interests of our children should be committed to their care; but this blight of annual elections takes much of their virtue out of them. How sleek and respectful and well-behaved school teachers are expected to be, previous to this annual ordeal, and how smiling and grateful afterwards!

Against this abomination, which if it does not exist everywhere does exist in too many places, every free man who values his freedom, and every competent teacher who has fairly earned his professional knowledge, and respects his honorable vocation, should make perpetual protest, and therefore I gladly contribute this my shot and shell in the bombardment of this pirate ship called *Annual Elections,* conscious though I am that those who think as I do, and think with gun-powder and grape-shot, must, in the ever-famous words, be ready "to hang together or to hang separately."

That a great deficiency of the practical element exists in our schemes of public school education is testified to by the efforts now being made, in an experimental manner, to add classes or schools in which the use of tools can be acquired and industrial arts be taught. Thus there exists in Boston now, besides the Russian system of teaching the mechanical arts at the Institute of Technology, classes for modelling and carving, and practical carpentry for children, and the latter have been quite recently established.

Without expressing an opinion of the exact value of these efforts, I consider them all as experimental remedies for a disease it would be better to prevent, for prevention is better than cure.

It is of very little use to shut the door after the steed is stolen, or to catch the boy just escaped from the Grammar School and teach him the elements of practical arts, the first instruction in which should be given in the Primary Schools. Plant in the Primary School the seeds which shall germinate and grow with the physical growth and bear fruit in the workshop, and continue planting all through school life the elements of all industrial arts. A definite proportion of school life, from its first day to its last, should be devoted to physical exercises having in ultimate view the occupations of after life. In the Primary Schools, the kindergarten exercises for the very young, and a development of them with additions for the older pupils, would be the beginning of this work.

In the Grammar Schools (after a committee of experts had decided upon elementary technical courses), two or three workshops should be fitted up in the basements, conducted by skilled workmen who can teach, and embracing the working in wood, metal, and perhaps one other material; also a small chemical laboratory, and models of constructions. In these practical class-rooms I would have every boy above ten years of age spend from one-third to one-half of his time at school.

In the High Schools the pupils, whether boys or girls, ought to spend quite half of their school time in the study of science or art, unless they are preparing for professions which ignore both. It would be conducive to the usefulness of women and the happiness of society, if the graduating girls of the grammar and high and normal schools were required to present themselves for their diplomas in garments made entirely by themselves, their boots only being the work of other hands. This, however, is entering into detail more than I intended. The experience of the world, and of its most successful nations, is before us and at our service. If five distinguished educators were appointed on a committee, or as a commission, to inquire into and report on such a question as this: "Do the public schools prepare the pupils in the best attainable manner for practical life?" and also to solve some such problem as this: "In an industrial and manufacturing community, where apprenticeships to trades and crafts are not in existence, what can be done in the public schools to remedy the lack of skill in workmen arising from the non-existence of apprenticeships?" then some light would be thrown upon this question. This is a matter of national importance. If the United States government were to appoint a paid commission of the five most progressive and experienced educators in the country, to examine into and report upon this subject of practical education, taking, say, two years for their task, I believe we should obtain information and suggestions from their labors that would enable us to double the value of our public school education, without increasing its cost. And if each State appointed a State commission to collect information and report concerning local needs, resulting from the occupations of the people, the national commission would be thereby greatly assisted, and we should finally be enabled to adapt the general information thus secured, to the wants of particular localities, and frame schemes of practical education for our schools that would be both general in principle and local in their application.

At present our enquiries, experiments and criticisms, are disjointed and ephemeral, and individual effort is overwhelmed by general apathy. It seems to me that teachers should not resent the charge that the schools are not what they should be, but allow it, and be ready and anxious to take their full share of the work and responsibility of making them just what they should be. Before any improvement can be made we must recognize the existence of evils to be removed, and then put our shoulders to the wheel with a will. That the schools have not kept up with the industrial necessities of the people is *not* the fault of the teachers, unless their being afraid to speak has been the cause, for I notice that the last persons to be consulted on educational matters are educators and teachers, as they are supposed (in this very practical age) to know nothing of the subject. They cannot, therefore, be blamed if the educational wagon gets into ruts, when even the ruts are on the wrong road. How does this ignoring of professional skill in education compare with experience in other occupations?

I know of no other profession which invariably takes counsel and direction from people not in the profession, or vocation, as we ought modestly to call it, though this is the rule in school management; nor do I believe that there exists under the sun an office which needs greater educational experience, wisdom or forethought, than that of the school committeeman, nor a subject which demands these qualifications in its administrators more than education.

It is singular how inconsistent many people are in their treatment of this matter. Few persons, who are neither theoretical nor practical sailors, would consider themselves competent to give advice to the officers of a ship concerning its navigation; and some few who are not in the medical or surgical professions would hesitate to direct a surgeon how to perform a delicate and dangerous surgical operation in which human life was at stake. But I venture to say that all the people so conspicuous for their modesty in these matters, would consider themselves as eligible candidates for the school committee; and teachers would have to bow to their decisions on educational problems without a murmur, or be *dropped*,— I believe that is the correct phrase. This seems strange to one who is not "to the manor born," but it is infinitely more disastrous to society than strange to individuals; for ships may be sunk and crippled men may be butchered, as a pastime, by amateur sailors and surgeons, without doing a tithe of the murder or mischief that amateur educators can inflict.

Fellow teachers, society is not alone to blame for this. Have we set an example to other people of respecting our profession and maintaining its rights, just as if we were lawyers or physicians? If not, it is never too late to mend. A poetical gentleman once wrote,—

"Who would be free
Themselves must strike the blow."

and considering the sentiment as poetry, it is unusually true. Other people may emancipate a slave without his co-operation, and he will become an emancipated slave. But if he emancipates himself, he becomes a man! To become men and women we must emancipate ourselves from annual elections, and other people cannot do it for us.

It is not to be wondered at, if the changed condition of society, resulting from material progress and scientific invention, as well as from the increase of population and expansion of territory, should demand many changes in the nature of popular education, to adapt it to present needs. The education in school of persons who were to be employed at agricultural occupations, and inhabiting a thinly populated country, is not the same either in amount or character as that which is needed by the artisans and mechanics of a crowded manufacturing community. What was sufficient education to fit a man to work on a farm or to raise cattle, a hundred or more years ago, in a primitive age, when the popular pastime of some cities was to hang or burn witches, is not adequate to-day,— the era of the telegraph, the locomotive, the steamship and the factory. Yet the exercises of the school-room have not so much been changed to adapt them to the necessities of a community transformed from the agricultural into the manufacturing, as they have been prolonged on the same old lines.

As a consequence the farms are deserted and impecunious by a generation of people educated above the demands of manual toil, though below the requirements of industrial, productive skill. As another consequence, both agriculture and manufacturing industry are alike in a low condition, for the literary gentlemen we produce in our schools, who are too cultivated to touch the handle of a plow, are too ignorant to grasp and wield the handle of a brush or a hammer. It cannot be denied that the education of the public schools, excellent as it may be to prepare a small number of persons, such as clerks, shopmen and the like, for the distribution of industrial products, is out of joint with the needs of a vast majority of the people, who have to become engaged in the production of industrial wealth in a manufacturing community. It must be acknowledged that this majority have not had the practical education which would fit them for work in the workshops, and alone would enable them to achieve success. The counting-houses and offices are overcrowded by people qualified to carry messages or to count, whilst the farms and the factories and the mechanical trades are languishing for want of skilled labor, or precariously supporting themselves by rude industries. The times are changed, and we have not sufficiently changed with them. We need no longer actually or figuratively to train men to drive stage coaches, but to educate them to drive the locomotive; and the builder who can erect nothing but a log hut is not so much in demand as one who can construct a bridge or erect a city.

The great need of this country is the development of its natural resources by skilled labor applied to agriculture and mechanics; that is, the raising of all kinds of food and the raw materials of the industrial arts; and secondly, the creation of skilled mechanical and artistic labor, which shall in the future make the country independent of foreign importation of manufactures, and itself self-sustaining. In other words, we want tillers of the soil and manufacturers of its products,—farmers and mechanics.

Those are the men this country needs to-day more than any other, and the only way to produce them on their native soil is to make the elements of science and the elements of art integral parts of all education from that in the primary school, until the technical school or the university has been passed through, and practical life begins.

That is what we have not yet done, and what we *must* do to put ourselves on an equality with other industrial nations; and, until we do so, we shall be the hewers of wood and drawers of water to other nations and countries possessing greater skill than we possess.

We want these essentially practical elements of education to prepare us for the *work* of the world, perhaps even more than we require literary education to prepare us for the contemplation of its history, or its adornment by the elegance of scholarship. This is what the United States needs to make the country actually, as well as geographically, the greatest country in the world. It is not the amount of soil in a country which makes it great, but the use men make of it; earth only gives men their opportunities, it does not make them men; and thus in this broad land we have ample opportunities, and now wait only for the practically educated men to conquer the earth and subdue it.

But does our present scheme of education produce such men and women as we need? It would appear that it does not do so, and that the fault is over-education in a literary direction, at the cost of little or no education of a practical character. This over-education in one direction makes people look down upon manual labor, and this under-education in the other direction makes the only manual labor possible to many, that which is unskilled and profitless, the mere application of brute force to material. All this encourages our enterprising youths to make a side-long smirk at hard physical or even skilled manual labor. This is a public calamity. It is destroying the virility of the original stock of New England, and this habit of looking at the handle of a plow, or a hammer, as something to be viewed away off in the infinite distance, but never touched, has led also to the feeling that contact with the soil is like contact with dirt. The English race in this its new home, is fast running to luxury, beauty and brains, and losing its productiveness, as well as the creative instincts which invented the proverb "By hammer and hand, all arts do stand." And yet unless something can be done to bring it back to physical work in the open fields, on the broad sea or in the workshops, there is but one more step for it to take before it becomes annihilated.

We want to be able to turn out boys from our common schools qualified by the elements of practical education, and not only able but willing and anxious to go out into the wilderness to conquer and subdue it; fit to go into a manufactory and through all the steps upwards until the whole business is understood and the factory belongs to the boy; or go into a workshop and put honesty, taste and skill into the workmanship; go upon a ship and think it more the work of a man to sail the boat, than to be a sick passenger in her. The want of skill among native mechanics is simply tragical in its costliness and its wastefulness, to say nothing of the vexation and loss it entails on their unfortunate employers. The deep-seated cause of all this is this smirk at physical labor, because we have not made provision in our schools that manual labor shall be skilled, and this keeps the more intelligent and aspiring of youths away from it, each one apparently crying out "give me anything, anything to do, *except* the work of a man." And so, whatever may be the dearth of skilled workmen and qualified master workmen, the stock of men-milliners is never exhausted, and you can always find an Adonis whose occupation is to sell tape, gloves and blue ribbons to young ladies.

Half the indoor occupations which men now fill, requiring no physical strength or hardihood, should be resigned to women, who would discharge the duty infinitely better than men can, because of their more perfect patience and forbearance, fortified by equal skill; and the men who are now hiding behind counters, distributing the fruits of industry, should be engaged in their production, and resign their positions as shopmen and book-keepers to the large and increasing army of intelligent women who lack employment and deserve it. And then, let those of whom it has been said "the glory of a young man is his strength," take a turn in the fields at the plough; in the workshop, at cunning craftsmanship; in the factory, providing for the million; at the ranche, supplying the markets of the world; on the broad ocean, ruling the waves in the interest of civilization; that they may learn and practice the endurance and forethought and government and productiveness, of which men alone are capable, at their best.

It may be said that this view of the subject is unreasonably hard on young men; yet I claim it is not their fault that our present education is not so practical as it ought to be, but rather the lack of foresight of their forefathers, who have neglected to take cognizance of the signs of the times; times which are changing all things, and which must change education as well, if it is to keep abreast of the times.

Some one will ask "What is a Practical Education?" such as should be given in our public schools. To this I would reply, a general elementary education in such branches of knowledge and practice as will fit all persons to begin practical life intelligently, in the several occupations into which that life is divided. If the majority of the scholars leave school at fifteen years of age, only a relatively small amount of what is called technical education can be given to any. But it is objected to our present scheme that it does in reality prepare the pupils almost entirely for a clerical or scholastic occupation only, and that is as much preparation for a technical subject as if all were prepared alone for the vocation of a bricklayer or carpenter.

To find out what is the best possible practical education in any country, we must ascertain what are going to be the occupations of the great majority of the scholars in practical life, and then so arrange the scheme of instruction that no large number of these occupations shall be entirely unprepared for, or ignored, in the scheme. A boy of fifteen years of age, who has been well taught in a good grammar school, is now infinitely better fitted for practical life in a warehouse or counting-house or store, than another boy is prepared who has to begin his practical life in any kind of a workshop. Which is only another way of saying, that our schools practically prepare the pupils for life as if they were all to be engaged in the distribution of industrial products, but they do not prepare them in an equally practical way, if they are to be engaged in the productive industries. Again it may be urged that the high schools, technical schools, colleges and universities, continue the general education of pupils into technical subjects; but to this I would reply, that they prepare only the comparatively wealthy for professional life, a mere fraction of the population at best, but provide nothing for the vast majority of mechanics who begin practical life at the age of fifteen; or, it may be said, that the mechanic must serve his apprenticeship to a master, and thus learn his business. That would be a sufficient answer if apprenticeships were general in this country, but we know this is not the case, and know also that apprenticeships are not in harmony with the national character, and that no substitute is provided for them.

The question arises then, ought we to conduct the education of our children up to fifteen years of age so as to fit them only to become clerks or shopkeepers, or treat their schools as preparatory schools to the higher professional schools only, or ought a broader basis to be arranged, that should, as far as it goes, be a preparation for a practical life in all occupations? If I understand the term common schools rightly, their conduct should recognize no one occupation and no one class alone, but be adapted to the needs of all.

The greatest deficiencies in our common school education are lack of instruction in the elements of science and the elements of art, the neglect to create habits of thought about the nature, facts, and phenomena of the physical world, and neglect to train the faculties of observation and expression in the eye and the hand.

In these alone we are behind other and older countries, and this produces its counterpart in after life, absence of skill and taste in the masses of our people in a majority of the industrial arts. This is not a sentimental view, it is sternly practical; and yet the efforts to remedy these deficiencies by some of the progressive and patriotic men in this country, are often met by a cry from others that the studies sought to be introduced, and which would make nine-tenths of the people better and more profitable workmen, are "ornamental" studies and not practical ones. I read, for instance, in that very able paper, the Boston Sunday Herald of March 24th, the following criticism: —

"CITY HALL. ORNAMENTAL EDUCATION.

"The remark is frequently heard of late that the graduates of the public schools of the present day are lacking in the essential factors of a practical education, and are much less qualified for the duties of real life than were the graduates of the same schools ten or twenty years ago."

I endorse every word of that, and would emphasize it by saying that they are even less qualified for the duties of real life now than they were fifty or one hundred years ago.

But why is that? Not because the teaching is not as good, as some allege, for I don't believe many of the school teachers of fifty or one hundred years ago, could, if they returned to the earth, find employment now, for want of qualification. The real reason is, that the change of occupations of the people, without a corresponding change in education, has made demands upon us for new subjects of practical education, which we have not yet supplied. The next sentence is as follows: —

"The scholars are, it is alleged, crowded in the number and variety of studies to the neglect of those branches that will be found useful in after life."

That is entirely true; but we must find the solution of this by deciding what is found to be most essential to success in after life to a majority of the people, and not only to a few. Upon that point the writer and myself should probably disagree, and I should claim that the evidence of master workmen as to what helps young workmen most when they begin practical life in the workshop as well as in the store, would not bear out what the writer suggests a little further on. He says: "Too much time, people say, is devoted to music, drawing, and the like, and too little to reading, writing, mathematics, geography, and the other English branches."

What "the other English branches" may include, I am unable to say; but if the expression refers to what are now recognized as the most important branches now taught in the English public schools, it would mean drawing, mechanics, and chemistry. But it does not mean that, for this expression was coined when the English people did not teach those subjects in the common schools, and were the most tasteless and unskilled race of white people on the face of the earth. So that it probably includes all those branches of education which leave people without taste and without industrial skill; and, if so, then in God's name let us avoid them. Now, whether spending ten minutes per day at singing in our common schools, so that future men and women may enjoy "the concord of sweet sounds," and learn to praise God with the best member that they have, in a decent manner, whether this is waste of time on an ornamental subject, I must leave to the glee-singers and psalm-singers of this musical generation to determine. But when drawing is called a useless and merely ornamental subject, seeing and knowing as I do its place and work in civilization and industry, I shall very strongly object to the statement. Moreover, comparing it and what it leads to with the important subjects it is supposed to injure, viz.: reading, writing, arithmetic, and geography, though I claim it helps all these and does not injure them, but comparing it with them, then, without disrespect to their necessity and excellence, I claim that taking the whole of the occupations by which men make their livings to-day, and seeing how drawing, reading, writing, arithmetic, and geography bear upon them, that drawing is in the majority of those occupations the most practically useful of them all, and pays its possessor the best. And I go on to assert that if we knew nothing more practical to fit us for our occupations, than reading, writing, arithmetic, and geography, we might be eminently fitted for heaven, but we should be starved to death on this earth, for want of a practical education.

Without the power of drawing not a steamship could be built, not a railway be planned, not a bridge constructed, not a labor-saving machine be designed, nor a tunnel be bored; and all the reading, writing, arithmetic, and geography we can learn from ancients or moderns, will not help us out of that difficulty, if none of us can draw.

Wipe out the ability to draw by neglecting to teach and foster it, and the same effect would follow as if you destroyed the literature and laws of the world. Abolish the power of drawing, and you could not erect a manufactory nor a mill, nor the machinery which has made manufactures cheap and abundant, nor even the designs which must precede the production of these manufactures; and yet we are quietly told by a certain class of people that we should abolish the little instruction we have in this foundation subject of industry, and devote ourselves more exclusively to, say, writing, so as to make more lovely tails to our y's and g's; or to geography, so that we may better know the ground plans of countries we shall never visit, but which are flooding ours with the refined products of their industries, because they have been live enough to teach this *ornamental* subject; and we have been less wise than they have been, and have neglected to teach our children the science which creates and the art which adorns.

The remedy for this barrenness of production on our part, proposed by some, is to go backwards into a still denser darkness; to retrace the first step we have made towards the light of the world, and finally arrive at the effulgence and glory of the halcyon period of twenty years ago! Now I love to hear old gentlemen sing comic songs about "the days when they were young" (with a chorus), but when they seriously propose that we should go backwards whilst all other nations and countries are pressing forwards, I take the liberty to protest, as a practical man, against such ignorance, and decline to accompany them either in spirit or in fact, in a mule-like or bucolic march *to the rear*. Men who make such propositions seriously, must be ignorant of the fact that, to-day, the wealthiest nations in the world are those in which art is most conspicuous, and that the most powerful nations are those whose sceptre is the sceptre of science.

Speaking thus, you must not regard me as one of those monsters who would, as Sydney Smith said, "speak disrespectfully even of the equator," but rather as one who would like to see the three R's, as well as the equator, keep their proper places, and not want to be everything and all-out-of-doors besides.

I observe that, in the same article in the *Herald*, military drill and sewing come also under the description of ornamental studies, though both have been found useful occasionally in the past, and may be again in the not very remote future, unless the millennium is upon us, which may Heaven forbid, at least until genial weather becomes permanent, clothing superfluous, and the lion and the lamb have laid down together and are asleep for all eternity.

Being engaged in fostering the subject of industrial drawing in the public schools of this State, you will probably expect me to refer to it as one of the educational subjects which I have suggested to be a necessity for the prosperous development of industry in this country. Before doing so I would like to read a slip, cut apparently from a Boston paper, sent to me a few days ago. The writer, as it seems to me, takes a sensible view of this matter:

> "Does it often occur to our merchants, in the risk and hurry of trade, to consider the effect which our attempts at art and technical education are to exercise upon the future fate of this oldest portion of the country? Agriculture is out of the question, our worn-out, rocky soil will never compete successfully with the virgin soil of the West; even our ruder manufactures are being transplanted to the seat of the growth of the staples that supply them. The lesson that all old countries have been obliged to learn is one that we have yet to master, viz: to diversify and cultivate our manufactures, so that as the old soil refuses to furnish paying labor for the muscles of this Commonwealth, even better paying employment for the brains may be discovered. This knowledge of the manner of making thought enhance the value of almost worthless material is the secret of the wealth of France and Switzerland. It cannot be denied that experience teaches us the lesson; neither can it be denied that a conscious idea of what must come, and an intelligent attempt at preparation for the future, will enable us to learn it more quickly and with less wear and tear. This is the key to the policy of art and technical education. Are our merchants and manufacturers fully alive to these facts, and are they doing all in their power to nourish these fountains of mercantile and industrial prosperity?"

Here I would like to quote the views of others in support of what has been said on this subject, to show that all persons do not endorse the theory that drawing is an ornamental and not useful element of education.

In a report recently presented to the Boston School Committee, by Mr. Charles C. Perkins, Chairman of the Committee on Drawing and Music, it is stated that drawing is a study "whose importance in school education is every year more and more widely acknowledged, as at least three-quarters of the children in our public schools are destined to get their living in industries which demand a knowledge of drawing. In the opinion of men best qualified to judge, drawing, so far from interfering with other studies, such as writing, arithmetic, geography, etc., is of positive assistance to them. The sort of drawing we teach is no amusement, or special branch of culture; neither does it require any peculiar artistic aptitude. It should rather be called graphic science than art education, as it is based on geometry, and is of a thoroughly practical nature. It is equally indispensable as a basis for such knowledge as is needed in all industries, and for that higher knowledge required in the arts of design. From the nature of our public schools, we treat drawing in them from its utilitarian side, and are able only in a very limited degree to blend the esthetic with the purely practical. Thus it has a bearing upon the manufacturing interests of this community, and these can only be vivified by the cultivation of public taste. By and bye many of the young minds, for whose training we are responsible, will have to deal with those interests, and it will be in obedience to the impulse given to them in our public schools that they will either raise or degrade them. As a matter of material gain this question of uniting art and industry is now looked upon all the world over as paramount."

Now from this it would appear that the most distinguished art critic in America does not think drawing merely *ornamental*. Mr. John Cullyer, of Brooklyn, N. Y., a civil engineer of great attainments, — a practical man directing the employment of many men in several branches of industry, — recently gave an address upon the topic of industrial education, and this is how he puts it: —

"There are now four fundamental studies required to fit children for practical life, namely, —

"1. *Reading*, because it is the means of teaching and acquiring knowledge;

"2. *Writing*, because it is the means of expressing knowledge;

"3. *Arithmetic*, because it is the means of computing knowledge and values; and

"4. *Drawing*, because it is the language of form in every branch of industry, from the most simple to the most complex."

He adds: "A boy or girl who can draw has acquired one qualification for nine-tenths of the occupations into which all labor is divided. This sufficiently sets forth the importance of drawing as a study, and establishes its claims to public support."

The French imperial commission, appointed in 1863, in order to discover why England was treading on the heels of France in her specialties of industrial art, as seen in the extraordinary elevation of England's industries between 1851 and 1862, the dates of the two international exhibitions in England, reported substantially, that the advance was due to teaching drawing in the English public schools, and the establishment of a normal art school and museum of industrial art.

The commission records the following decision: —

"Among all the branches of instruction, which in different degrees, from the highest to the lowest grade, can contribute to the technical education of either sex, *Drawing, in all its forms and applications, has been almost unanimously regarded as the one which it is most important to make common.*"

Prussia requires drawing to be taught to every child in the empire, from the primary scholars upwards, not as an accomplishment, but a necessity of practical education.

In England, schools of art and schools of science are part of the national scheme of practical education, whilst classes in art and science exist by thousands, and are to be found in every city, town, or populous village in the land; in addition to which, technical universities of enormous proportions are rising at South Kensington, Manchester, Birmingham, and Leeds.

I might enlarge, by going into details of the mighty efforts now being made in every section of the British Empire to develop skill in industrial art, to fortify the compulsory elementary education which is now becoming general. In India, Australia, Canada, the Cape of Good Hope, and every great colony or dependency of the empire, the art-life blood of South Kensington is beating with missionary enthusiasm. But to enlarge is needless. England spoke for herself at Philadelphia in 1876, and needs no further testimony.

It is not only in one subject that the world is changing the nature of its education. Here is a paragraph cut from the Boston *Evening Transcript*, and which appeared so recently as Tuesday, March 26, 1878: —

"Australia has 1,037 schools for technical instruction, 4,296 teachers, and 97,713 pupils, besides schools of forestry, mining, and agriculture. Bavaria has 1,671 industrial schools for girls, with 1,837 teachers, and 71,635 pupils, a polytechnic school at Munich, 36 technological schools, and four of agriculture. In Germany there are 34 schools of architecture, 25 of mining, 17 of forestry, 108 of commerce, 146 of agriculture, 10 veterinary, and 86 other technical schools. Demark has 49 'farmers' high schools,' with 3,135 students, of whom 1,003 are females. In Holland there are 11 navigation schools, and 32 industrial and drawing schools. In Switzerland, 4,373 females are employed in schools teaching needle work."

Before leaving this department of the subject, I should like to quote the recently-recorded opinions of some prominent educators here, as to the practical worth of drawing as an element of common school education. Mr. Philbrick, the late superintendent of Boston, says: —

"The introduction of drawing into our schools I regard as one of the most important and practical educational steps ever undertaken in this city, and there is no part of my work as an educator which I look back upon with more satisfaction than upon my efforts to secure efficient instruction in drawing in the public schools of this city and State."

Mr. Harris, of St. Louis, says: —

"I am of opinion that the State of Massachusetts, which has done so much for instruction in this important branch of education (drawing), will soon stand in the very first rank among industrial peoples for the tasteful ornamentation of its manufactures. In this respect, St. Louis, which outranks other Western cities in the variety and aggregate value of her manufactures, aspires to emulate Massachusetts, and therefore regards all money expended in industrial drawing as an investment that will return a hundred fold to the wealth of the city, through the increased value of her products."

President Gregory, of the Illinois Industrial University, testifies: "I regard the study of industrial drawing as absolutely essential, not only to sound technical education, but as of the utmost importance to the industrial interest of our country, and have urged a wider attention to it, both on our school men and our legislators. It is gratifying to know that the public mind is already awaking so widely to the importance of the training to be derived from studies in drawing. One may confidently predict that the noble lead of Massachusetts will soon be followed by other States in making drawing one of the common school studies." All this is very complimentary to Massachusetts, though if we consider what we are really doing throughout the State as a whole, in comparison with what is being done in European States of the same dimensions, I fear that the brilliancy of the eulogy will pale by the comparison. The testimony has, however, been introduced into this paper as food for reflection to those persons who lightly declare that drawing and other elements of technical and industrial education are ornamental and not practical subjects, and who are clamorous for their withdrawal.

At the Deer Island and Westborough Reform Schools drawing is being taught to the boys to assist them in acquiring some skill in any practical trade they may be learning; and it seems to me that Boston and Massachusetts may well be proud of their pioneer action in this matter. For though these boys have forfeited their liberty, they have not forfeited their claims on society for a good practical education.

On which side lies the weight of evidence as to value of these branches? On the side of progressive nations, of investigating commissions composed of the greatest statesmen, political economists and savans of Europe, and of the foremost educational authorities of America; or on the side of those anonymous and irresponsible guides who would lead us backwards? Whilst my relationship to the subject of drawing has called my attention to it more than to other branches of a practical education, I by no means wish to overrate its importance above others. This subject, however, is the one which the legislature of Massachusetts has said shall be taught in all the common schools of the State, and which visionaries are constantly attacking and misrepresenting. I realize from the experience of all pioneers that we who are engaged in this work must expect the criticism of all who do not understand this subject as well as of those who do, especially of those who do not want the world to go any faster than their own feeble footsteps will carry them. Yet people who mean well have a right to be informed of the other side of a controversy before they can make up their minds on which side lies the right. On my own doctrine that teachers should form part of the crew on this good ship Education, I have undertaken to say these words to you, and through you to others.

The time will come, and come shortly, when the education given in our common schools must undergo a complete revision to adapt it to present needs, and the great changes made will be to increase the number of so-called ornamental, but really practical subjects, and not diminish them, — to recognize the importance of science and art in their bearings upon national prosperity; to decrease the mental strain upon the children and teach them more through the senses, which are God's own channels of instruction and education; and to recognize that sound physical development is the only permanent basis upon which to prepare for future intellectual development, and thus to teach the laws of health to the body as well as the principles of morality to the soul. A good deal of useless memorizing and the accumulated educational drybones of ages will be swept away, and the school-room become a livelier and happier place for both scholar and teacher. The book of nature will be opened more frequently, and the leaves of her many volumes will sometimes be substituted for the leaves of the textbook: for there is an education not of the class-room, and an Instructor not appointed by the school committee. In seeking for this education and sitting at the feet of this Instructor, men have not unfrequently been admitted to great thoughts and profound knowledge; and in listening to the unspoken words of this Instructor have been taught much that has influenced for good their present and future. And then this compound school-room existing both within and without the walls of a building will be the happy ante-chamber to the laboratories in which the sons and daughters of poor men, as well as the sons and daughters of rich men, have to spend their useful lives, prepared therefor by the same development of thought and observation, the same acquisition of skill, the same love of the fit and the beautiful, as the equal children of a true democracy should be educated,—without distinction of sex or class or sect or party; but treated as the children of a common Father who are in time to become fellow-citizens of a common country.

MEN AND BRETHREN, WOMEN AND SISTERS.

When this has been attained to, we shall all be able in the persons of our children to obtain what all honest people want, viz., a good practical education.

INDUSTRIAL EDUCATION,

AND

DRAWING AS ITS BASIS.

ADDRESS DELIVERED AT THE ANNUAL MEETING

OF THE

MASSACHUSETTS TEACHERS' ASSOCIATION,

AT WORCESTER,

DECEMBER 28, 1878,

BY

WALTER SMITH,
ART MASTER, SOUTH KENSINGTON, ENGLAND,
Director of Drawing in the City of Boston Public Schools, State Director of Art Education, Mass., and Principal of the Normal Art School of Massachusetts.

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Copies may be obtained on application to the Curator
NORMAL ART SCHOOL, BOSTON, MASS.

LABORERS IN THE VINEYARD.

"Two men I honor, and no third. First, the toilworn Craftsman that, with earth-made Implement, laboriously conquers the Earth, and makes her man's. Venerable to me is the hard Hand; crooked, coarse; wherein notwithstanding lies a cunning virtue, indefeasibly royal, as of the Sceptre of this Planet. Venerable too is the rugged face, all weather-tanned, besoiled, with its rude intelligence; for it is the face of a Man living manlike. Oh, but the more venerable for thy rudeness, and even because we must pity as well as love thee! Hardly-entreated Brother! For us was thy back so bent, for us were thy straight limbs and fingers so deformed; thou wert our Conscript, on whom the lot fell, and fighting our battles wert so marred. For in thee, too, lay a god-created Form, but it was not to be unfolded; encrusted must it stand with the thick adhesions and defacements of Labour; and thy body, like thy soul, was not to know freedom. Yet toil on, toil on; *thou* art in thy duty, be out of it who may; thou toilest for the altogether indispensable, for daily bread.

"A second man I honor, and still more highly; Him who is seen toiling for the spiritually indispensable; not daily bread, but the bread of Life. Is not he, too, in his duty; endeavouring towards inward Harmony; revealing this, by act or by word, through all his outward endeavours, be they high or low? Highest of all, when his outward and his inward endeavour are one; when we can call him Artist; not earthly Craftsman only, but inspired Thinker, who with heaven-made Implement conquers Heaven for us! If the poor and humble toil that we have Food, must not the high and glorious toil for him in return, that he may have Light, have Guidance, Freedom, Immortality? These two, in all their degrees, I honor; all else is chaff and dust, which let the wind blow whither it listeth."—*Sartor Resartus.*

INDUSTRIAL EDUCATION, AND DRAWING AS ITS BASIS.

WITHIN the memory of people now on the earth, some of whom being alive are capable of noting the fact, there have been considerable changes in many things. It was a stilted saying of Dr. Johnson's, that "that which is ancient is not necessarily obsolete, and that which is modern is not necessarily new." So it is probable that many of our most original new inventions have been worn threadbare in other ages, after amusing antediluvian people by their extreme novelty; whilst many things which we are proud of now will pass into the realms of oblivion, to reappear a thousand years hence as the last new thing. Thus there appears to be a resurrection for all things, periodical or final, whether they be good or bad, to our joy or sorrow.

Perpetual change seems to be the law of nature, as inflexible as the law of gravitation, and though the most merciful changes are sometimes so gradual as to be almost imperceptible to us, yet there is no halting-place between the cradle and the grave for us, either in the changes which we are causing, or those which we are undergoing. I think it was Edgar Allan Poe who, in one of his tales, makes a revived Egyptian mummy say that "great movements" used to be awfully common in his young days, some centuries before the dynasty of the Pharaohs, but people got sick of them because they never made any progress. It is, perhaps, hardly safe to generalize too broadly on the limited observations of a short lifetime, or I should feel inclined to say that what ails many of the great movements of our day, is that they make no progress. Yet there is a wholesome and healthy love of change, which recognizes the necessity of transformation as a natural law, without claiming for it the virtue of a new inspiration, or condemning all other revelations.

Healthy people are always growing, and feel the divine irritation of growth, either physically or mentally; and it is the surest sign of disease and decay when human creatures cry out only for rest, and permission to doze away into the region of perpetual slumber, crying out all the time, "Let us alone."

Let us, therefore, recognize that it is human nature, healthy human nature, to be alive and moving; that to be stagnant and averse to change is deathlike, and that the golden mean is to accept the inevitable cheerfully, and try to grow all the time, respecting the past and hoping for the future, modestly desiring that our best work may be acceptable, and that for all weakness and deficiency we may be charitably forgiven. This view seems to be consistent with the recognition of change that is progressive, and the permanence of that which is excellent in itself.

I have been led into this train of thought by a somewhat prolonged study of the actual present condition of education in this country, and by a careful analysis of some of the practical results of education as displayed by the nations of the world in the Paris Exhibition. The conclusions come to by a practical observer may be of some interest to you, and therefore I will ask you to excuse the imperfect manner in which they may be presented to you, for the sake of that which I shall have to say.

THE TEACHER'S OFFICE.

And firstly, I know that I shall not ineffectually appeal to your indulgence for permission to say something on behalf of the teacher's office and character, for if it be true that "as is the priest so are the people," it is equally true that "as is the teacher so is the education."

I think it can be demonstrated that many of the failures and difficulties which society suffers from, and by which education is injured, are distinctly traceable to the very indifferent, if not erroneous opinions, generally held about the position of the teacher; and it seems to me to be the duty of those who feel this to be true, to say so, as modestly as they can, but as firmly as they know how.

We often hear things said, or see them written, about the acts and motives of teachers, that are shocking if true, and wickedly unjust if they are not true; and I very much fear that teachers allow themselves to be talked about, and even thoughtlessly join in attacking their own class, in a manner which encourages silly people to belittle their office, by statements and behavior that are insulting to honest men and women who happen to be teachers. Let me, then, remind you of a wise old saying which runs thus:

"Greater love hath no man than this, that he lay down his life for his friends."

I know of no higher way in which we can testify our respect and regard for an object, or a vocation, than by laying down our lives for it, either by one great heroic act of self-devotion, in the jaws of death if need be, or by a long life of daily duty, consecrated to the work which our hands have found to do, conscientiously and lovingly laying down our lives as the most cherished offering we can make to our God and our country — and the most perfect expression of our greatest love.

The vocation of a teacher offers us the opportunity of doing this, in the most exalted manner; for neither the bar, the pulpit, the platform, nor even the press, is so powerful for good or evil as is the school-room and its influences. At a time when the human character is sensitive and unfolding, it is placed under the influence of the teacher to mould it into shapeliness or misdirect it into moral ruin; and this mighty influence should be wielded with a sense of awe and responsibility that ought to crush out every unworthy thought or act from a teacher's mind and life.

That many teachers share in this thought and feel this great responsibility we all know to be the case, for many a saintly or heroic life may be traced to the inspiration and example of a teacher, whose life and soul have been consecrated to the work of the school-room. But that this habit of thought, as a qualification for the vocation of a teacher, is not invariably looked for by society, nor among the requirements of school committees, is proof that the absence of it is no bar to employment. Yet I unhesitatingly assert, that men who do not feel the great moral responsibility of being teachers, or who do not regard their occupations as being worthy of the brightest intellect and the most devoted lives, or who are teaching school as a mere temporary occupation, are not fit to be teachers at all.

TENURE OF OFFICE.

The ideal of a teacher's character and qualifications being so high, it follows that the office should be surrounded with the respect, and even veneration, proportioned to its importance in the minds of all sensible people. If men and women seriously propose and offer to prepare themselves for, and devote themselves to, the work of a lifetime, and are found upon inquiry to be fitted for it, they ought to be engaged for a lifetime, or during mutual agreement; and until this is the case, the reciprocity in the engagement, which should be equally shared by both of the contracting parties, is all on the side of the teacher. Here there is room for change which is progress.

That much-needed change would be one way in which the public could display its respect for the office, and would be some return for exacting the very highest qualification, both intellectually and morally, from all teachers; and the public good requires that society should be content with no lower standard.

Another way in which the work of education might be purified and improved, would be to regard teaching as a profession, and paying for the labor performed as well as any other professional work is paid for, either in public or private employment. The best teacher in a city ought to be paid as much as the best lawyer, doctor, or clergyman, and the lesser lights in the same ratio as in other professions; and if that is not so, we may naturally expect the education of that city to be of a lower order than its law, physic, or divinity; and anything so deplorable as that is fatal to the happiness and economy of any community, besides being manifestly unjust to teachers and to education.

Education itself may be elevated by thus raising the standard of personal character and professional attainments required in the teachers, making their positions permanent, and increasing their compensation to an equality with that awarded to other professional labor of the same value. Among the various agencies by which we may help forward the good cause of education, it seems to me these are worthy of trial, or at any rate, of discussion. Perhaps some of our veteran leaders may feel that such generalizing as I am guilty of, is no part of a special teacher's business. What, then, if I should say that I am not a special teacher, though it is my business to make and direct such teachers, and can do a special teacher's work in my profession, if need be; — am I incapacitated by my vocation from taking an interest in, or stating my opinion regarding matters of public interest, either general education or general demoralization, more than you are, or any man is, by his trade, profession, occupation or calling? If so, what is it that disfranchises me and leaves you and others still enfranchised? I would not deprive you of this right, nor deny your qualification; and that which you and all other citizens are entitled to I claim for myself, and will maintain my right to it. But to this I would add, that as a parent, citizen, and tax-payer, I am more interested in the whole subject of education than in any one department of it, and that it is the general character and appreciation of education which to-day stands in need of thoughtful consideration, much more than any of the details of instruction in one or more branches. This must be my apology. I hope it is even yet possible to be both by profession an artist, and by graduation and vocation a teacher, without ceasing to be a citizen. I claim no more, and will accept no less than this, from any community of which I form a part.

CHANGES IN EDUCATION.

Reverting to what has been already said on the subject of change, it is apparent to me that there must come great changes in our time in the whole field of education, and that we must either take part in them, or be superseded by them.

No thoughtful American can have examined the two great exhibitions at Philadelphia and Paris, as I have done, without feeling that his country does not show well at such displays in comparison with many European countries. It used to be the monopoly of England to stand lowest in the visible evidences of civilization, as seen in her manufacturing industries. I am sorry to be obliged to say that to-day we in America have inherited that reputation which England has lost. You must bear with me in thus speaking the truth to you, because I am here myself to share in the reproach and to do my part in its removal. I have not deserted a sinking ship to fly to a sound one, but have deliberately, on your invitation, forsaken the safe ship, and placed my foot upon the deck of one which, on the great industrial sea of labor, is neither sound nor safe; so that if you impugn my judgment, you can hardly question my motives, or deny my right to speak. "Come over and help us," was the invitation, nay the very words, which brought me across the Atlantic, and, being here, I am going to be heard.

In the great Exhibition of 1851, the English critic had to walk through the industrial department of his native country with bowed head and a sensation of shame. In the Paris Exhibition of 1878, he could examine English work with head erect and a feeling of honorable pride. And though this may be regarded as a sentiment only, it is one which has a very metallic character, intimately associated with dollars and cents, and with that which makes life worth living.

I have seen and watched this transformation of the industries of a nation, from a condition of semi-barbarism to one of the greatest refinement; from the comparative worthlessness of rude labor to the highest development and value of matured skill. It is an inevitable result brought about by human means. It is something the nation is proud of and finds intensely profitable. But there is no mystery about it to those who have been working in the vineyard or even only been looking on for the last seven and twenty years; nothing supernatural in this growth of skill and values, which has developed under our own observation as the result of faith, patience, foresight, and work. This is how it all came about. A few men who were intelligent enough to see that skill paid better than clumsiness, and was a nobler and more precious thing, and were patriotic enough to say that England was behind in her taste and skill, and that it was unprofitable economically and disgraceful nationally to be on a lower plane than other nations in the highest developments of civilization; a few men who would *not* be put down by the derisive shouting of "Rule Britannia," by sham patriots, nor the roaring of British lions, have achieved this transformation so glorious for England; and have done so by appealing, through a system of national art education, for something which was said to be not in the instincts of Englishmen; and in spite of all opposition, and in the face of most unfair criticism, have accomplished their work, and made the English a skilled nation. Now, I hold that whilst it requires some courage to say deliberately that we are behind European nations in taste and skill, we must say it, though it makes the eagle scream, or the lion roar, for it is the only verdict that can be given by honest and competent judges; and that to say so here and now, until it is believed and remedied, is not to express an opinion which is pleasant, for it may cause me to be much misunderstood, but, simply in the line of a proper discharge of my duty, because I know it to be true, and this may be one step in a long journey, perhaps, towards the industrial skill this nation sorely needs.

This is where the subject becomes interesting to us as teachers. If the present condition of American manufactures is unprofitable and discreditable; if skilled labor cannot, under the present educational dispensations, be produced in this country and has to be imported, and the enormous importation of the products of skilled labor from abroad is not to be continued, discouraging as it does the native workman and impoverishing the whole country, then it comes within the province of a more developed and practical education to provide the remedy; and I take it that we, as teachers, have something to do with this matter. I know that microscopic politicians have persuaded the long-suffering public of this country that teachers ought to have nothing to say about education; but I think they should have, and am going on to say my share, in spite of all the politicians who are not yet translated.

To whom should the public look for information about education, if not to teachers? If teachers are timid or dumb, can they complain if education suffers? Two-thirds of the general literature of education is inflicted upon a docile public by plausible theorists who never strayed even by accident into a class-room; who boldly seize the chart and compass to navigate our ship on a sea they never saw, and by observations they never took. Brethren, it is high time that teachers should begin to teach, and not leave themselves and the public the victims of theoretical experimenters, who are not even yet in the early days of their apprenticeships to a very complex business. I notice that this latter-day cry for oral instruction only, and abolition of text-books, comes from such people, who, nevertheless, have no intention of touching this burden with so much as one of their little fingers. Such cries are dangerous to progress already made, and are like newly discovered short cuts, which are proverbially long roads. Young enthusiasts just beginning to sense the power which is new to them; ancient fabrics set on fire for the first time and burning with a consuming fierceness; extremists who, by exaggeration, make the mildest virtues into aggravating vices, all by their intensity bring a good thing into disrepute, and have to be tempered by moderation, and cooled down into steady and unexcited service. Oral instruction is necessary to every good teacher, and the younger the pupils the more it is essential to their happiness and progress, but you can no more abolish text-books for proper use in day schools than you can banish them from universities or technical schools for adults. And there is as much danger to be feared from oral instruction without text-books as is found in the mechanical use of text-books without the life of oral instruction. Every good teacher approves of a due proportion of oral instruction, and practises it, regarding it as the brightest and keenest weapon in his armory; and uses text-books also to make his work stick, and sustain him and his pupils, in weak moments, at the standard of their best. No good teacher avoids it, or goes fanatically insane about it, either for or against. He knows that if you deliberately abolish text-books, and call upon teachers to depend upon oral instruction only, not occasionally, as it is now, and always has been practised, by good teachers, but as proposed by fanatics, namely, for five hours a day on five days in the week, you will kill all the good teachers in a month, leaving alive only the sticks who are skilled in the art of self-preservation, who never teach at all, orally or otherwise, and therefore never wear out, to comfort you in your solitude among the graves of those you have destroyed.

Suppose, for example, you were to try this wholesale oral experiment on ministers in churches. Make them preach without manuscript, and insist on their congregations singing without hymn-books, the preachers to change their subjects every hour, not for one hour a day but for five hours a day, not only on one day in the week, but for five days in the week, to a congregation of lost souls, every one of whom has been born an infidel, and is in dire need of conversion. The clergy are good, self-sacrificing men; many of them approve of this idea *for schools*, and would doubtless not object to having it practically tried in churches. When strong men and adult pupils have been proved to be able to endure this strain and are improved by it, it may, without cruelty and iconoclastic stupidity, be fair to try it on weak women and infant scholars. If experimenters will begin there, they will find that in a year many pulpits and churches have been many times over thus emptied, and many graveyards and asylums filled, and the fragments of congregations left will declare that their works do follow them. In mercy, then, begin with ministers and churches, because all concerned will be able-bodied adults and likely to exercise free-will to defend themselves; then, if it succeeds, we may try it on teachers and little children in our schools, without being guilty of Herod's crime, or breaking all the commandments at once for educational purposes, as Moses did.

THE INDUSTRIAL ELEMENT IN EDUCATION.

What I want to say to you, and through you to all whom it may concern, is, that unless the technical education of the producing classes in America is provided for better than it is now, that is, general education in the elements of art and science for every child, and in the practice of industrial skill for youths and workmen, all the great natural advantages of this country in extent and variety of native products will be neutralized and destroyed.

I would impress upon you that this is a question of general, and not of special, education. The establishment of special industrial schools only, which, after all, is only patchwork veneering, and remedial, not organic and preventive, will not meet the difficulty. That has been tried and failed, and will do so again. You did not dispel illiteracy and ignorance by educating one-quarter of one per cent. of the population, but by teaching all; and you will not by any system of special industrial schools that a community will willingly support, be able to educate even so small a percentage of the whole people as that very insignificant fraction, nor accomplish more for industrial skill by them than the education of a few monks in the middle ages did for the general education of the people, without common schools. Our general education must include the elements of art and science, taught to every child in every school during the whole period of school life, and in reasonable proportion of time to that devoted to other profitable subjects, before special industrial schools are aught but playthings, which they have been and will continue to be whenever and wherever they have been established, without the preliminary preparation for them has been provided in the common schools.

There is no country in the world to-day that can absolutely ignore public education in art and science without becoming impoverished. There is none, inhabited by white races, that has made so little provision for it as we have; and, as a consequence, no other country imports so large a proportion of the products of skilled labor as America; and that means a national leakage where there should be a spring of wealth;

raw materials exported, manufactured goods imported; pennies-worths' sent away, to pay for dollars-worths' brought here. It seems perfectly unaccountable, that, whilst the general education of the people has been so admirably provided for, even if too limited in scope, through being too exclusively literary and theoretical, and the technical education of the professional classes developed in the most complete manner, yet, though apprenticeships to trades have gone out of fashion, the artisan and mechanic are left without technical education, and, generally speaking, the American workman has to work by rule of thumb. Yet, so it is. I invite those who do not like this condition of things, to remedy it.

Whilst you cannot find in any country a body of men with more average intelligence and brightness than American mechanics, you can find none with so few opportunities of improvement, in their several crafts, by education.

As a consequence, our public taste and industrial skill are about in a similar position as the same were in England in 1851. If we are to make a change as radical and complete as was made in that country, we must adopt similar means; and if the political economists are wise in their generation, they will find that there is no time to be lost in providing technical education for working men.

Drawing, the true basis of Technical Education.

Here I am tempted, and not unwillingly, to make a distinction in your minds between that drawing as an element in education which is the true basis of all technical education, whether used as a language, a weapon, or an interpreter, because it is the only mother tongue common to all men, and that other plaything of the past called picture-making, against which mock heroes and heroines rave and rage in true Quixotic fashion, confounding the two distinct things, and condemning them both because one was useless. Without a particle of knowledge of the subject, even mere popularity hunters, whose notoriety is fading, will elicit the resurrection of a little ignorant enthusiasm against drawing, by condemning something they miscall drawing, but which is really only the discarded toy which used to be called drawing; and in my experience, no branch of the real drawing which we teach now so rouses their ire as that upon which scientific progress is based, geometry and geometrical drawing. I have been called by every sort of bad name, because I have insisted that Science is the true foundation of Art, and have conducted, and now conduct, the Normal Art School of Massachusetts, upon that axiom, as a corner stone. It matters not whether the art be fine art, or industrial art, it is equally true of both, and this view which has been criticised by some men called artists, because they paint and sell pictures, but who never drew anything correctly in their lives, and never will whilst they are utterly ignorant of science, meets strong confirmation in the words of Herbert Spencer.

He says: "Unexpected as the assertion may be, it is nevertheless true, that the highest art of every kind is based on science; that without science there can be neither perfect production nor full appreciation . . . . . Only when genius is married to science, can the highest results be produced. Science is necessary, not only for the most successful production, but also for the full appreciation of the fine arts."

This which is true of fine art is more than true of industrial art and art education, for the scientific element in it distinguishes the true from the false, the useful and the fruitful from the useless and sterile. I have endeavored to make this matter simple by the following statement; one of a series drawn up for the guidance of teachers.

> "Good industrial art includes the scientific as well as the artistic element; science securing the necessity of true and permanent workmanship, art contributing the quality of attractiveness and beauty. The study of practical art by drawing should, therefore, comprehend the exactness of science by the use of instruments, as in geometrical drawing and designing, and the acquisition of knowledge of the beautiful, and manual skill in expression, by freehand drawing of historical masterpieces of art and choice natural forms."

Geometrical drawing is but the interpretation and application of mathematics to industry, bringing the abstract truths of science to the concrete form of service. For which reason the most distinguished American art critic has said that over the door of every workshop in this land should be written the old Greek inscription, "None but the skilled in geometry can enter here." Now let us see what Herbert Spencer also says about the practical value of mathematics, which, let it be remembered, can only be applied to the purposes he describes through the instrumentality of drawing, in the hands of the architect, engineer and designer, whose work becomes only possible of execution through the skill and taste which drawing alone can give to the mechanic and artificer:

> "For all the higher arts of construction, some acquaintance with mathematics is indispensable. The village carpenter who, lacking rational instruction, lays out his work by empirical rules learnt in his apprenticeship, equally with the builder of a Britannia Bridge, makes hourly reference to the laws of quantitative relations. The surveyor, on whose survey the land is purchased; the architect,

in designing a mansion to be built on it; the builder, in preparing his estimates; his foreman, in laying out the foundations; the masons, in cutting the stones, and the various artisans who put up the fittings, are all guided by geometrical truths. Railway-making is regulated, from beginning to end, by mathematics: alike in the preparation of plans and sections; in staking out the line; in the mensuration of cuttings and embankments; in the designing, estimating and building of bridges, culverts, viaducts, tunnels, stations.

And similarly with the harbors, docks, piers, and various engineering and architectural works that fringe the coasts and overspread the face of the country, as well as the mines that run underneath it. Out of geometry, too, as applied to astronomy, the art of navigation has grown; and so, by this science, has been made possible that enormous foreign commerce which supports a large part of our population, and supplies us with many necessaries and most of our luxuries. And, now-a-days, even the farmer, for the correct laying out of his drains, has recourse to the level — that is, to geometrical principles. When from those divisions of mathematics which deal with *space* and *number*, some small smattering of which is given in schools, we turn to that other division which deals with *force*, of which even a smattering is scarcely ever given, we meet with another large class of activities which this science presides over. On the application of rational mechanics depends the success of nearly all modern manufacture.

The properties of the lever, the wheel and axle, etc., are involved in every machine. Every machine is a solidified mechanical theorem; and to machinery in these times we owe nearly all production. Trace the history of the breakfast-roll. The soil out of which it came was drained with machine-made tiles, the surface was turned over by a machine, the seed was put in by a machine, the wheat was reaped, thrashed, and winnowed by machines; by machinery it was ground and bolted, and, had the flour been sent to Gosport, it might have been made into biscuits by a machine.

Look round the room in which you sit. If modern, probably the bricks in its walls were machine-made; by machinery the flooring was sawn and planed, the mantle-shelf sawn and polished, the paper hangings made and printed; the veneer on the table, the turned legs of the chairs, the carpet, the curtains, are all products of machinery. And your clothing — plain, figured, or printed — is it not wholly woven, — nay, perhaps even sewed by machinery? And the volume you are reading; are not its leaves fabricated by one machine and covered with these words by another? Add to which, that for the means of distribution over both land and sea, we are similarly indebted. And then let it be remembered, that according as the principles of mechanics are well or ill used to these ends, comes success or failure, — individual and national.

The engineer who misapplies his formula for the strength of materials, builds a bridge that breaks down. The manufacturer whose apparatus is badly devised, cannot compete with another, whose apparatus wastes less in friction and inertia.

The ship-builder adhering to the old model, is out-sailed by one who builds on the mechanically justified wave-line principle. *And as the ability of a nation to hold its own against other nations depends on the skilled activity of its units, we see that on such knowledge may turn the national fate.* Judge then the worth of mathemathics."

If this be true, and knowledge of the kind described and the skill which comes out of it be as important to us nationally, as is alleged, then we should begin to see that drawing is by far the most practical and most profitable of all the subjects taught in our common schools; for through it alone, as the concrete form of mathematics, can this knowledge and skill be acquired by the masses of the people. I commend this to the thoughtful attention of persistent chatterers, who describe drawing as an "onamental" study which practical people cannot afford.

Value of Criticism on Industrial Drawing.

In this matter teachers are pioneers, which in education is the modern secular name for the early Christian profession of the confessor, who bore testimony through tribulation to his faith. Both encounter trials and persecution, and to both there is now and has ever been the encouraging prospect as a reward for constancy and perseverance, of being finally elevated to the crown of martyrdom.

It seems to me, that well-meaning persons interested in this subject, and anxious to be useful and just in their work and views, when divided into the two sections of teachers and critics, are apt to oppose and misrepresent one another when they practically want and aim at the same thing. It may be as well, therefore, to state most emphatically, that the employment of art and science as an element in general education, because of their intensely useful natures, both esthetically and practically, is altogether a new development, in its universality and significance, here and elsewhere, in which we are all beginners, whether as teachers or as critics. The men who are hard at work upon it in the class-room or on the platform, honestly desiring to be useful and willing to learn by experience, should not be hampered and hindered by the carping of mere speculators without experience, day-dreamers who have visions based on nothing, and theorists whose specifics have never been tested. On the other hand, those who are in the thick of the fight cannot see how the battle goes, nor ought they to complain of the judicial and competent criticism of those who mean well to their Zion, but who do not know enough to understand it. There is a distinction to be made between such criticism and that of incompetent and merely spiteful, jealous, or ignorant fault finders. A hard working teacher, toiling and moiling with a strong heart and heavy load, has, and ought to have a supreme contempt for the buzzing and booming of these frivolous flies, who think by settling on the wheels of the chariot to impede its progress by humming; whilst he should treat with respect the honest opinion of those who, differing from him in details, still put their shoulders to the wheel, and help.

So that whilst critics have neither history nor precedent in technical educational experience, by which to judge our work, and, therefore, their assaults are mere explosions, not directed fire, having little foresight and no hindsight, teachers must also realize that they themselves are pioneers, whose highest qualification for their work is their ability to learn and make history, and establish precedents, in virtue of this ability. If both agree as to aim and object, however much they may differ about details, progress will be speedy; if one assumes omniscience and the other claims infallibility, progress is impossible. But if between conflicting opinions, the public, without being skilled in the subject of controversy, has to choose which service it most needs, that which is constructive and serves as well as it knows how, or that which is destructive only and assails, there can be no question that, as half a loaf is better than no bread, the public will be better off with a modest half loaf of service than with the paper bill of fare offered to it by the critics, and written in gall or poison.

HOPEFUL SIGNS.

The interest arising in industrial art and art education throughout the length and breadth of this land, far more general and active than that which is felt in fine art, encourages us to hope that before long we shall witness a general advance along the whole line of secondary education. It is badly wanted. The budding signs of an artistic maturity, the forerunners of something that will become a just pride in the future, are not absent from the present average condition of American society. Premonitory symptoms of a return to the organic love of the beautiful, which in the infancy of our race built the shrines and cathedrals, are evident on all hands. We see indications of it in the art-manias which periodically attack our most sensitive and refined people, the visible results of which are not so valuable in themselves as in the evidence they furnish of a life that still exists for a purpose. Thus we have safely passed through the blacking-bottle-decoration period, if not without a scar, yet without permanent disfigurement; the mysteries of China painting and of over-glaze and under-glaze, (in the throes of which many of our best and fairest, unlike their prototypes, have toiled and spinned,) have been explored, and their inner depths sounded without danger; the South Kensington stitch and female pedestrianism have been attacked and defeated coevally, by our esthetic and physical athletes, and the doctors who have watched their patients through these mild attacks elsewhere say we shall be the better for them when the crises are over, for though difficult to bear whilst they last, they are symptoms of our excellent constitution. These infantine troubles, like the cutting of teeth, measles or whooping cough, apparently cannot be avoided, must be gone through, and are not dangerous if allowed to run their courses and are not interfered with. When they have taken their places as strata in the formation of our progressive civilization, we may, perhaps, be strong enough to give up the importation of pagan or heathenish monstrosities, playing with every plucked flower that floats to us from foreign sources, for the gratification of our refined taste; and then begin to patiently toil at the radical work of education, to develop our own resources, which is a necessary condition for the growth of organic, Christian, American art. When people of wealth and leisure encourage and buy native American art-products from workingmen and women, and give up playing at weak amateur patronage and performance of esthetic tricks in skilled craftsmanship, — the faint echoes from the other side of the oceans of real living arts existing there, — it will be better for everybody, the producer, the possessor and the race. Whilst our adults are thus harmlessly playing with these borrowed plumes, it is for us to lay deep and broad and strong the foundation of a refined national taste, by the art education of all our children. Neither civilization nor skill was ever yet grafted upon a race, as a tree is grafted; it must come as a tree grows, from the seed, and draw its nourishment from the soil which gives it both life and character.

After working and speaking and writing on this theme of industrial art for the last seven years in this State, and having my conclusions strengthened and supported during the last half-year in Europe, from observations personally made there, I find it very refreshing to see, in the last report, just issued, of the Boston School Committee, the following trenchant passage: —

"The question of teaching trades in our schools is one of vital importance. If New England would maintain her place as the great industrial centre of the country, she must become to the United States what France is to the rest of Europe, — the first in taste, the first in design, the first in skilled workmanship. She must accustom her children from early youth to the use of tools, and give them a thorough training in the mechanic arts."

That, in my humble opinion, is the most important utterance yet made on the subject of technical education in this country; and if every school committee in New England would not only utter but adopt the sentiment, and act upon its conclusions, the one great educational need of the country would soon be remedied.

But see how completely the passage is suggestive of what *should* be done, rather than of what is being done: "The question of teaching trades in our schools is one of vital importance;" and as that is not done now, it points to something in the future, which, if carried out, will completely revolutionize the present scheme of instruction. Then, again, "She (New England) must accustom her children from early youth to the use of tools, and give them a thorough training in the mechanic arts."

This is not said in reference to a few of her children, — picked geniuses, whom not even an infallible pope could choose in their teens, — but all her children; and the term, "mechanic arts" has the broad significance of the words, "industrial arts," creative and productive, not distributive.

As this also is not done now, here is more work for the future, and equally radical and important in its character. Then, "to maintain her place, New England must become the first in taste, the first in design, and the first in skilled workmanship."

You will observe the expression, must *become*, not be as she is, but *become* so in the future. It ought to be remembered, in this connection, that the above language is employed by a body which has already done more to bring about the objects described than any other representative body in the United States; and this expression of what should be sought for in the future seems to me the most hopeful and far-seeing sign and indication that has appeared in the whole educational field, coming from a body which has already done so much.

I honestly believe that it is necessary to the welfare and prosperity of this country, that such views should not only be held, but carried into execution. How, when, and where, are matters of detail upon which opinions would differ, but they are not beyond the power of judicious counsel to solve.

Probably some school-masters, of conservative tendencies, would be shocked at so radical a measure as teaching the use of tools in some of their class-rooms; and I once heard the master of a school in a beautiful new building, declare that he should oppose the use of a part of his school for a night-class of any sort, because he was afraid the evening students would dirty the steps at the entrance to the school with their boots, in bad weather! I submit, however, that in such a matter we are the servants of the public, and not their masters; and if, for cogent public reasons, it be found necessary to engraft the elements of technical education both upon the day-schools and in the establishment of night-classes, we ought to be ready to co-operate with the movement, — for dirty boots and clean; in fair weather and in foul. If we are not so ready, the sooner we are gathered to our forefathers, the better it will be for everybody, excepting, perhaps, our unfortunate forefathers.

Making Use of Opportunities and Experience.

If we turn from a contemplation of the achievements of European nations in imparting value to their great industries, through education, to inquire what we are doing in the same direction in the United States, where our youths do not even have the discipline and benefit of apprenticeships, the prospect is indeed a gloomy one, for the field is almost bare.

Yet our opportunities are as great as those of European nations, with the single exception of the possession of museums and picture galleries, a want soon to be supplied.

We have as good teachers and as good school buildings as they have anywhere, and all we have to do is to utilize them. Where our teachers have had the opportunity given to them to learn and teach drawing, they have learnt it, and are now teaching it more successfully than it has yet been taught in any European country.

In this matter I know whereof I affirm; and my belief is, that the same result would follow if they were required to teach the elements of science, as that which has transpired from their instruction in the elements of art.

I have been more than encouraged by the results of our labors in the subject of drawing, during the seven years I have lived and worked in America, and say emphatically that if you give American teachers a chance, they can do anything, and do it well, that comes legitimately within the province of public education. We have, in Massachusetts, solved one very important problem. To the vexed question of whether drawing can be taught by the regular teachers to all pupils, we have found an answer of the most conclusive kind, by doing it, and doing it well. The matter has been settled finally for all who are open to conviction, in many cities and towns of this State, and probably in others of many other States. In addition to this, I am enabled to say from my investigations whilst abroad, that in no other country of the world besides America, is the subject of original design taught in all the grades of public schools. Nor do I believe that it is taught so well, even in the grades or countries where it is taught at all, and they are few. Exercises in original design produced by pupils in one of the public schools of this State, were taken by me this year to Europe and submitted for criticism to some of the most distinguished art-masters and critics. They were executed from the instruction of the regular teachers, by pupils who averaged less than fifteen years of age, and no special teacher of drawing had ever seen the exercises until they were completed. They were not picked, but every exercise done in the classes was there, and, as I happened to be present at the examination when these drawings were made, I saw them produced with my own eyes. These works excited the greatest astonishment and admiration of all who saw them, and they were many and competent judges. The opinion formed of the regular teachers of American schools was more complimentary than I can describe to you, without hurting the feelings of those who have never tried to teach drawing, though it was very gratifying to me to hear those opinions expressed. And as a consequence of what I saw and heard, I do not hesitate to say, that to-day this subject of industrial drawing is better and more systematically taught here in some of the public day-schools of Massachusetts, than it is in any European country, not excepting France nor England. The great trouble is that though it is so well taught, it is not taught in all places, and in every class-room, in every town or city. The law of Massachusetts says that drawing shall be taught to every child; and yet many school committees, and teachers too, say that they do not teach it because there is no penalty attached to a breach of the law! In my opinion, people who only keep the laws when the police are about, are utterly unfitted to have anything to do with the education of children.

I can sympathize with and respect any one who tries to do something good and fails, though I never knew a teacher who honestly tried to teach drawing who did not succeed; but if there is an unpardonable sin, it must be that which is committed by the people who are elected by their fellow-citizens to bring up the children of a community as law-abiding creatures, and set them the example of open defiance of the laws; and if there is a sin against the Holy Ghost, it is that.

CONCLUSION.

Fresh from a contemplation of the world's civilization as displayed in the Paris Exhibition, I can say with confidence that if we are wise enough to learn what other nations have learnt from previous exhibitions, and remedy the proved deficiencies of our education, by establishing technical or secondary education, there is no reason for anxiety about our country and its prosperity. But if we cannot learn this lesson, there is real peril in store for us. How can we escape the inevitable penalty of being the last in the race, if we are stagnant whilst other nations are advancing, and who began with a long start ahead? Let me repeat again: "As the ability of a nation to hold its own against other nations depends on the *skilled* activity of its units, we see that on such knowledge may turn the national fate." Protection does not protect: a Chinese wall ten times as strong as the original one, built to cover every inch of the coast-line and frontiers of the United States, would not isolate clumsy or antiquated industries or preserve them for a year; it would be destroyed from inside. You cannot protect any race of men who are without skill and endurance, except by making them skilled and enduring; and when we are assailed on the Atlantic coast by skill and on the Pacific by endurance, it is the defence of a quack to say, "Keep them out with a Chinese wall of exclusion." You cannot do it. Spend the same money and the same thought in education to produce greater skill and more endurance than that which assails you, and then no broken reed of a Chinese wall will be required. I wish that the wise words of the Boston School Committee could be heard throughout the length and breadth of this land, and that every live educator would closely examine into this question for himself. We cannot see the bearings of the matter if we limit our observations to the horizon of State, city, or village in which we may happen to live. To grasp the whole significance of it, we must know what has happened elsewhere than in our homes, and at other times than our own. The wisest people are not those who live only from hand to mouth, and see nothing but what they run their heads against.

Cautious and provident folks contemplate the future and prepare themselves for it. We must do so, and find profitable employment for our people, or we shall wax weaker instead of stronger, and our size will only make our ruin great and widespread.

In conclusion, there is one thing which I hope to be excused for suggesting. As a rule, teachers, the masters of public schools, keep sadly too much in the background when public questions are discussed, especially when educational matters are under deliberation for legislative purposes. It used to be said that there were three sexes—men, women, and clergymen. Is it possible that there are two sorts of *men* — citizens and teachers? Is it possible that the annual election of teachers makes it dangerous for the best educated part of the community to take men's parts in public business? If it is so, then, for the sake of the manhood we hold from God, let us emancipate ourselves from a servility that is degrading, and do men's shares of public work.

I know that in the old country an ordained clergyman cannot become a member of Parliament, and it seems to me you believe that here an ordained grammar or high-school master cannot take part in public affairs without being dropped like an egg, and get into equally hot water. I say it *seems* so, judging from the way schoolmen hold back from their duty in helping to govern the country. But it would not be so if their public duties were manfully done, for education has its weight with both educated and uneducated people. These conventions of teachers are, or appear to be, very refreshing, but primary meetings are both creative and recreative.

I am quite conscious that much of what I have said may be distasteful to many of you. I would remind you, however, that you invited me to address you, and I did not invite you to come and hear me, whilst the doors have been kept open so that you could run away at any moment; but acting on my own doctrine, I dare only say to you that which I honestly believe, about education, present and prospective. If our President had sworn me upon the Bible when ascending this platform, that I should tell the truth, the whole truth, and nothing but the truth, I should have still read to you this paper; not claiming it to be the whole truth, but as much of the truth as I could perceive, and know how to express. Twenty years ago I was hissed on a public platform in England, for advocating free, unsectarian, and compulsory education. To-day, national education in England is unsectarian and compulsory, and free to all who cannot pay. The men who hissed me are all dead. This day I stand here to advocate technical education, everywhere and for everybody, and in twenty years from now we shall have it; and by analogy, if you hiss me for doing so, you will all certainly die. As I think it important that we should all live, and bear our share of the educational burdens of the future, as well or better than we have done in the past, I feel sure you will not hiss me, and die, because the new year is at hand, and we all want to live amicably through it. And so, thanking you for kindly attention and forbearance, I will say that our country wants our service; we can give it; and I earnestly invoke the blessing of the Almighty upon our labors in the future, and may we have both the skill and courage to perform them well.

3

Technical Education

—AND—

Industrial Drawing.

PAPER READ AT THE ANNUAL MEETING OF THE NATIONAL
EDUCATIONAL ASSOCIATION

—IN THE—

Department of State Superintendents of Public Schools,

—HELD AT—

WASHINGTON, FEBRUARY 5, 1879,

—BY—

WALTER SMITH,

ART MASTER,

Director of Drawing in the City of Boston Public Schools, and State Director of Art Education, Massachusetts.

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TECHNICAL EDUCATION AND INDUSTRIAL DRAWING.

Mr. Chairman, Ladies and Gentlemen:

The subject upon which I have to address you to-day, is that of Technical Education and Industrial Drawing, — a subject which is comprehensive enough to afford interest to the general public, whilst it is at present the best-discussed theme among professional educators. I am aware that this whole matter is neither new nor strange in Washington, for from the Bureau of Education in this city has emanated much of the most valuable information we possess concerning it; and the lecture, recently published, by Gen. Birney, delivered by him before the Washington Art Club, upon a phase of the subject described as "Industrial and Decorative Art," is perhaps the fullest and fairest representation of this matter that has appeared on this side of the Atlantic.

Though I hardly expect to present to you much that is new, I may possibly co-operate with you in the diffusion of some new light on an old subject; hoping that thereby additional interest may be awakened, and that in consequence serious consideration may be given to this question, one which has assumed an importance that may be fairly described as national in its character. It may at first sight be considered an over-estimate of the matter, if it should be asserted, that upon the technical knowledge and skill possessed by a nation, depends its safety, its wealth, and indirectly its happiness. Yet this is undoubtedly true.

It may also be stated, that any scheme of education which does not from the first make provision for the gradual acquirement of such technical knowledge and skill, at such times and in such ways as the ages and circumstances of the pupils necessitate, is insufficient and not practical, and in dire need of complete re-organization. Yet that happens to be the case with every scheme of public education administered by city or State authorities, in the United States of America to-day.

I could have made that statement in many more words, and so have beclouded its meaning that you would not be shocked by it; or I might have quoted some one else who said it, and thus have shielded myself from the responsibility of saying it. But I prefer to say it thus briefly, in order that there may be no possible misunderstanding of it, and that those who may wish to attack the statement and its author, may know the cause of war, the man to be assailed, and where to find him.

For the reason that our schemes of education have been found deficient and not practical, the whole subject of general education is now on its trial before the public; and it requires no very deep study, nor wide research among newspapers or periodicals, or in meetings such as this, to be convinced that this trial will be completed, and a verdict be rendered by the jury.

It is a common thing to hear sensible men say, as it is also frequently said in newspapers, that for the duties of real life the children in the public schools are not so well prepared now as they were twenty years ago, or even fifty years ago, though they know more, and it costs more to teach them, — whilst a silver-tongued orator in Massachusetts has stated that under the old district school system, when a boy spent a few weeks in the school in winter, and worked the rest of the year on the farm, he got a better because a more practical education than he can get in the country to-day.

The trouble about such remarks as these is that they are true; and that it is possible for them to be true reflects great glory on the advancement of this country in civilization, and much discredit upon public educators and public education, thus lagging behind the progress and failing to supply the educational needs of the country.

For the true interpretation of such statements is, that during fifty or twenty years past the country has advanced faster than its school-room education, and instead of requiring for its citizens now the standard of education which was sufficient then, it needs something more in harmony with the educational standard of older countries, and that is something it does not now possess. That the farmer's boy should be fitted by a few months of book learning, and many months of technical training, to become a good farmer, is the best possible argument for technical education of another kind, to fit a vast majority of the people for practical life who will never become farmers. For as the school-room instruction represented the boy's *general* education, and the farm labor his *technical* education, it will be noted that he was preparing for practical life in one vocation from the time his education commenced.

But it has pleased the Supreme Power, that in the development and consolidation of this country we should not all become or remain farmers. The products of the soil are the raw materials of the industrial arts, and it takes more people to convert those raw materials into useful objects for a civilized community, than it does to produce the original materials from which the objects are made. We are changing our occupations from being largely agricultural, to manufacturing, and have thus outgrown the educational facilities which may have been ample for the youth of this nation, in the days that are past.

It is from this cause that we are justified in describing our present education as deficient, inasmuch as it makes no ample provision for the technical knowledge and skill required by the people engaged in trades and manufactures. The literary part of our education, which fits for mercantile life and the professions, has not retrograded, but advanced, until it monopolizes nearly all the precious time of youth; while the needs of those destined for the trades and manufactures are ignored in our schemes of education, left high and dry without aid or comfort, until the name of the native-born American mechanic is a synonym for want of skill, and his work for something that will not last.

There are exceptions to this rule, as to every rule, as in our mechanical and labor-saving machines; but where it is not true, we shall find that men have become tasteful or skilful in spite of their lack of opportunities, and not by means of the opportunities which their education should have given them.

The gradual decay and final extinction of apprenticeships to trades, in this country, has the credit of being responsible for much of the lack of skill among workmen, but it does not account for their want of taste. As a substitute for apprenticeships it has been proposed to establish trade schools, in which the projectors assert that by constant practice under an instructor, for two years, a youth will become a better workman than by an apprenticeship in the regular way for seven years. I can hardly believe that to be true, for there is something which comes from the experience of making objects in a workshop, carried on in the regular way of trade, that no hot-house culture in schools alone can give. Yet I should like to see the experiment tried, whether instruction, carried on for a few months only, can be made a substitute for apprenticeships which prepare people for the work of a life-time.

It seems to me that the true remedy is to introduce the elements of industrial knowledge and skill into the public schools, in such a manner that it will assist, and not obstruct, general education; and then, when the boy leaves the grammar school to begin his wage-earning life, we should provide technical schools of art and science, where, during his evenings, he can learn the theory and thereby improve in the practice of his daily work. This is the only way the mechanic or artisan can be reached, and it is the way he is now being reached in all the skilled countries of Europe. He has to support himself during the interval between twelve or fourteen years old and twenty years old, and if we offer technical education to him in day schools only, in that period when he must be at work, and cannot therefore avail himself of it, we offer it only to the children of the wealthy in the name of the mechanic. There are agencies enough already for the education of professional men, and their future employment will pay for any investment which their parents may make in their education.

What is now wanted is, that the needs of the mass of the people should be considered, and that the most neglected of all, the mechanics, should have a fair chance given to them, out of the public funds, of which they are the principal producers.

That a great reform in this direction is necessary, seems to be the opinion of all educators whose experience and observation have been extended beyond the immediate surroundings of home. How to make this necessity evident to the public, and bring it about without injury to that which is good in present schemes, is the problem of our day. This is pre-eminently a period in which to take a broad survey of the educational field, especially from the economic aspect, and incidentally, also, from the standpoint of progress.

The times are hard; commercial and financial distress press heavily in every direction, and the necessity for economy holds in its relentless grasp every item of public expenditure, which it is subjecting to the most rigid scrutiny. All this is auspicious. Economy is the parent of honesty, and it is the best possible good fortune that the system of public education of this country is receiving a thorough economical purging.

It is not from any *lack* of education that complaints are being made, and the question therefore arises, whether the education is of the right sort, and whether the people who most need it obtain what they want. And true economy, which is always far-seeing, cannot afford to be niggardly. The farmer does not regard the outlay on his seed-corn as an extravagant expenditure so much as a necessary investment; for he remembers that "there is that scattereth and yet increaseth, and there is that withholdeth more than is meet, and yet it tendeth to poverty."

Let us see to what extent this educational scattering is carried on, and what comes of it.

In the Eastern, Middle and Western States, there was expended last year the sum of about $70,000,000 for public education. What was this vast sum expended for, what were the results aimed at, and what did the public get for its money?

These are practical, common-sense questions, and their consideration is pertinent in a meeting like this. Nor can we blink the issues they involve; for, in face of such an expenditure, the people who are toiling with their heads or their hands, and who in these distressed times are straining their utmost to make both ends meet, surely have a right, in face of such heavy taxation, to ask what it is all for, and to see if they are really getting their money's worth for it.

Every educator should welcome these inquiries. Certainly it behoves every one who is engaged in directing the features and in administering the provisions for maintaining public education, carefully to study the subject in the light of present experience. From such a study he will be able to answer these inquiries intelligently, and also be able, during this period of depression, while the economical knife is being laid so closely to public expenditure, to direct public opinion, so that no harm shall come to necessary and fundamental features of public education.

I am free to state that there has been a great deal of sentimentalism about this subject. Because it is, perhaps, the most important and indefinite single subject with which a community or a State has to deal, it not unfrequently happens that it gets straddled by theoretical hobby-riders, who make of conventions such as this the Epsoms or Jerome Parks, wherein pet theories are made to show their paces.

Being a specialist myself I know that I run the risk of being considered one of these self-same hobby-riders; but I repel the insinuation, for my interest in the whole subject of national education is infinitely greater than my anxiety for any detail in it.

It is true that I am engaged, professionally, in promoting one particular branch of education. At the same time, I wish to make the fact clear, that in urging the importance of technical education and industrial drawing, I place its consideration, not alone on the grounds of its special or exceptional character, but rather on the basis of its great and economical value in general education and in practical life.

As the subject of education has been so much discussed of late, and as there is such a contrariety of opinion offered concerning what its features and aims should be, it may be wise to take a few soundings, in order to see where we are.

For the purpose then of getting at a few points of general agreement, let me ask, What is understood by education, and particularly by public education? I think the answer that would come to such a question, especially from the States to which I have referred, which have taxed themselves $70,000,000 for its support the last year, would be, that *education is the fitting of youth for the occupations of adult life and the duties of good citizenship;* and it seems to me that we should have in such an answer, one that practically covers the whole question; and yet, simple as this answer is, self-evident, indeed, as it appears, I observe in the discussion now going forward, that it is extremely difficult for educators to defend the present system of education, particularly against the charge of its want of practical character, in any way that commends itself to the common mind by its explicitness and clearness.

I am aware that very many eloquent and scholarly essays have been written in behalf of the present system; but the discussion has been beclouded by the use of many phrases not understood by the public, such as "the developing of the mental and moral faculties of youth," "the broadening of their intellectual powers," and others of that sort; whilst the virtues of "disciplinary studies, and culture studies," are also enlarged upon. By such treatment, the direct and simple object of education has become enveloped in an æsthetic mist of fine phrases, to such an extent, that it appears to plain and honest-minded folks, as decidely too much set up in character, and, as hardly belonging to the toiling masses. Consequently, it is being vigorously attacked for its apparent want of practicality on the one hand, and its undue expensiveness on the other. As an educator, and as an advocate of the broadest possible education for all classes, I am glad to see these attacks made.

Every true educator should welcome them. We cannot have too much discussion; and one of the effects of this present wide-spread interest, I have no doubt, will be the explosion of many educational theories which are now so boldly advanced, the abandonment of the present narrow and over-literary schemes, and the establishment, on a firm basis, of a system of education answering the needs of the working-man and mechanic, the producers of industrial wealth, as well as preparing others for the distribution and appreciation of the products, skilled and unskilled, of the whole country.

When the people see clearly, and understand intelligently, the close relationship of the practical education offered to them, to success in all conditions of life, they will not suffer it to be hampered or curtailed for want of sufficient support.

It is, perhaps, the first duty of educators, to make clear the practical features of the educational ideas they advance. Holding this opinion, I beg to submit to your consideration some general points in regard to the scope and character of public education, which I regard as fundamental.

I assume it is agreed that public education in this country must tend towards a preparation for the occupations of adult life, and the performance of the duties of good citizenship. This being granted, our first step is to see what the general occupations of adult life are, for which education can be an elementary preparation; and second, what are the duties of good citizenship which elementary education can promote.

In the first place, then, let us take a broad view of what the general occupations of adult life are.

First. We have those who are engaged in producing food, and raw materials of industrial arts, animal, vegetable, and mineral. These are the producers of natural wealth.

Second. We have those who are engaged in using the raw materials produced by the first class, as a basis on which to expend their skill and taste, in the manufacture of objects for the comfort and pleasure of mankind. These are the producers of industrial wealth.

Third. We have those who are engaged in trade, finance, and transportation. These are the distributors of the wealth produced by the first two classes, but are not themselves the producers of wealth.

Fourth. We have those engaged in military, naval, and political service. These are persons employed for the protection of social and political order.

Fifth. We have those engaged in the professional occupations, such as lawyers, clergymen, physicians, and teachers. These are employed in ministering to the legal, religious, physical, and educational wants of all classes.

Sixth. We have those engaged in personal or domestic service.

You will observe that it is the persons engaged in the first two classes of occupation, that are the real producers of wealth, while the others are maintained by occupations growing out of its distribution, or by professional or political occupations, growing out of the necessity for protection to the whole social and political organism.

In the educational discussions of the day we do not see sufficiently realized the changes in the relative numbers of persons in these six classes that have been made in recent years; nor are educators sufficiently alive to the necessary changes in the scope of public education thereby entailed.

What, then, are these changes? If we examine this classification closely, we shall find that these changes have their origin in and are principally based upon the transformation that has taken place, within the last few years, in the second group of occupations, those of the industrial classes. These changes have been enormous; I might say sufficiently so completely to revolutionize the old relation of these classes to one another. A slight examination of the material and political condition of any one of the leading States today, shows that its material and political power is centering about its industrial classes, and that as these flourish or decline, so all the other interests of the State flourish or decline. Indeed, it is a well-established economic truth, that industrial wealth, in other words a healthy condition of the industrial occupations, is absolutely necessary for the success of all other occupations.

So clearly is this fact recognized by the five great European nations,— England, France, Germany, Austria, and Italy, — that to-day they are in earnest competition with one another to develop to the utmost the industrial productiveness of their people.

Let me for a moment digress, to make a statement in regard to what industrial development consists of. In a manufactured product we have two elements, the raw material and the skilled labor which has been put upon it. Take, for instance, this piece of steel. Its value is, perhaps, three cents. As yet skilled labor has hardly touched it. Fabricated into this form, we have a surgical instrument which is worth ten dollars. Now, what makes the difference in price between these two pieces of steel? The simple fact that skilled labor has been applied to this one, and not to the other; and it is the skilled labor, therefore, which gives it its chief value. Take this piece of cotton cloth, for another illlustration. You have here eight cents' worth of raw material in cotton. This material has been fabricated by many processes, until there has been produced this piece of cloth, worth one dollar and a half.

Thus, again, we see that the principal element in the value of an article may be the skill and taste which have been expended upon an insignificant bit of raw material.

Then, it may be said that the ratio of increase in value made by skilled labor upon the raw material will be determined by the amount of skill and quality of the taste displayed.

This is precisely where a consideration of the industrial element in education becomes important. When we see what creates value in labor, and how little we have hitherto done by education to foster this element, it is time to overhaul the whole subject, and use both spade and pruning-hook in the operation.

To understand the full bearing and significance of this matter of technical education in art and science, we must consider its influence on human labor and industry. For, be it remembered, that this whole question is an economical one, not one of sentiment. It has as much to do with practical life and profitable labor, as the employment of the locomotive in lieu of horses, or the use of gas instead of farthing rushlights.

Let us for a moment, then, look at what constitutes the element of value in human labor.

Labor is the application of two powers: first, skill; second, force. The product is valuable in the proportion as it displays skill, and without value in the ratio of its absence of skill. This is as true about the making of a watch, or a nail, or a pair of boots, as about the performance of a difficult surgical operation. The skilled workman is the one who produces something of greater value out of the same material than the unskilled workman can, and with less waste of time and material. He is, therefore, a more profitable agent to employ than the unskilled, and his work being more valuable, he receives a higher compensation for it, whilst his employer, finding a ready market, at high prices, for industrial masterpieces, makes more profit on the sale of them, than on unskilled productions. The purchaser is better satisfied with the article and willing to pay a higher price for it, than for one displaying no skill. So that the application of skill and taste in the production of an object gives (1), to the workman higher wages ; (2), to the employer larger profits ; and (3), to the purchaser more satisfaction, than if the skill and taste had been absent. This is the prosaic and practical aspect of the question, its economical character.

There is another view I shall refer to, though not to enlarge upon. That may, if you please, be called the sentimental aspect, in contradistinction to the practical one. It is this: That the workman, whose taste and skill are employed, is a happier man, than if only his muscles are used in his work. His soul and spirit are engaged; the immortal part of him is influencing his labor, breathing into the work of his hands the very breath of the life that shall never die.

Such a man was Raffaelle when painting the Sistine Madonna, transferring the image of his own beautiful soul to the canvas; an act of homage and praise to his Maker, for life and happiness, and a gift to all posterity of a "joy forever."

To the practical people who don't believe in sentiment, I would also like to remark that the Sistine Madonna is *worth a good deal of money.*

What is true about the productions of one workman applies to all who are engaged in the industrial arts, and it is, therefore, equally true about a whole nation. The tinker and the maker of watch-springs may work in the same material, steel; yet one may produce an object of small value out of a pound of the material, whilst the other produces many of great value out of a pennyweight of it. So it is with almost all the raw material of the arts, both fine and industrial. A piece of clay, which is of less value than any coin in circulation, becomes, under the touch of Michael Angelo, of greater pecuniary value than any coin that was ever circulated; a lump of common earth, that might have been made into a fire-brick worth a penny, has been transformed by the great sculptor into a relic that its weight in gold could not purchase.

There was a change of values with a vengeance! What the alchemists failed to discover as a trick, the artist accomplished with his skill, turning clay, marble, stone into gold, by the touch of his magic hand.

Though the difference in relative values between skilled and unskilled work is not so great in industrial art as it is in fine art, yet there is a difference, and it is invariably recognized and paid for.

It is hardly worth while to continue this argument, because no one can challenge it, and one illustration that is typical of thousands is enough. We *must* recognize its truth, and the value of its significance to us is determined by the proportion in numbers of our people employed in the manufacturing industries, and the amount of capital invested in them.

If we were a purely agricultural people, the loss we suffer from want of industrial skill would not be so great as to be formidable, nor would the danger to our commercial prosperity be so imminent as it is. But we are a manufacturing people, with very heavy interests involved in this question, and these interests can only be preserved and developed by investing them with taste and skill. In other respects our people are highly educated and have refined taste, and will not be satisfied with clumsy and tasteless objects, whether of native or foreign manufacture.

We have common-sense and refinement enough to want things to look well, and wear well, and unless native manufactures can be so made, we don't buy them. Hence the enormous importations of foreign goods which do satisfy our love of honesty and beauty, by their skill and taste. You have only to go into the stores of any large city, and inquire where the finest goods came from, to find out why a good many native workmen are out of employment.

If the present condition of labor is thriftless and unprofitable, what should be done to ensure its improvement? We know what other nations have done when suffering from the same cause. The first thing England did was to establish schools of art in the centres of manufactures; but that did little good, for their influence was too limited to improve public taste. The next experiment was to teach drawing in the public schools, and train highly skilled teachers of art, and therein was found the true remedy. The public was taught at the right age for learning, in childhood, and the pupils of the public schools, whose taste had been encouraged by regular exercises in drawing, crowded the schools of art in the evenings, as soon as their apprenticeships to trades began and practical life commenced. In 1851 there were nineteen schools of art in the United Kingdom; this year there are nearly one thousand schools of art and art classes, and of a much higher standard of success than in 1851, and industrial drawing is now taught in the national schools.

What has been done for art by the government and the people, is insignificant compared with what has been accomplished in scientific instruction during the last twenty years. The regular teachers of the day schools have qualified themselves to give instruction in art and science, and the national school buildings are used for classes. In consequence there are many thousands of science classes spread like a network all over the country, discovering, developing, and economizing all the native talent of the people.

The French are devoting more and more attention to technical education in the public schools, and last year, whilst I was in Paris, the legislature passed an ordinance appointing seventeen inspectors of drawing for the public schools of the republic. This was entirely a new measure; but it shows how keenly alive the French are concerning the sources of their national prosperity, and how little they feel they can afford to rest on their laurels.

To return from this rather long digression.

I could bring before you hundreds of articles exhibiting but trifling values of raw materials, such as iron, wood, clay, glass, and textile fabrics, in contrast with great values from skilled labor put upon them; but I think we shall all agree that the value of manufactured goods depends principally upon the quality and amount of the labor they contain.

Now if we consider for a moment that the number of raw materials and metals for all the industrial occupations is comparatively few, and that the cheapness of transportation makes their distribution among nations common, it is evident that the nation which has the most skill and best taste to put on to these raw materials, that is, the one that can fabricate them into the greatest variety of objects, and make them minister to taste as well as to convenience and comfort, holds a decided advantage in all the markets of the world.

I do not wish to weary you with statistics on this point. Let me say, however, that last year England exported about $750,000,000 worth of manufactured goods. If we take a safe estimate and say that one-half of this amount represented the product of skilled labor, you see at once what an enormous exporter she is of the labor of her people. If you examine the trade of France, you find that she greatly exceeds England as a seller of skilled labor. No one could examine the recent International Exhibition, at Paris, without being struck in amazement, at the great wealth these two nations are producing and accumulating, by virtue of the skill and taste they are promoting among their peoples.

I think it will be evident, without argument, that the great development which has taken place in these industrial occupations, must affect all the classes who are non-productive, and, therefore, all society.

Seeing, therefore, that it is the development, principally in the industrial occupations, which constitutes the principal changes now going on in human employments, let me turn from this general view of the subject, and ask your attention to a particular exhibit, which practically and very completely illustrates the relation of these various classes of labor to each other, and their relative importance when considered in the light of education.

I invite your attention to the material and political condition of the people in the State of Massachusetts.

In this State a very thorough attempt has been made to get accurate statistics, bearing upon the social and material condition of the people, and the work has been so well done by the Chief of the Bureau of Statistics, Col. Carroll D. Wright, that it is believed to stand unequalled by any similar statistical inquiry.

As these results are important, and I shall have occasion to refer to them, I have had them placed conspicuously on this chart, that you may the more readily grasp their import.

Observe that in the State of Massachusetts we have a population of about 1,600,000.

Our first inquiry was, How do these people get their living? What are their occupations?

In this population we have,—

Employed in	Government and professions, . .	29,730
	Trade and transportation, . . .	104,935
	Domestic and personal service, . .	424,289
	Manufact'ng and Mechanical Industries,	316,459
	Agriculture, ...	70,945
	Fisheries, ...	6,656
	Laborers (unskilled and unclassified), .	52,179
Engaged in no occupation (about), ...		300,000

Add to these numbers about 300,000, for the youth of the State, and we have a general picture of how this community is employed, and the number of children in the course of preparation for the various occupations of the State.

Let us examine this exhibit closely, to see which occupations form the real basis of the State's prosperity.

Shall we find this basis in the first division, in the professional employments? Certainly not. These are not employments which add directly to the productivity of the State. Indeed, these occupations could not exist, were it not for other employments beneath them.

Shall we find this basis in the second, among those engaged in trade and transportation? Here again we have secondary employments, mere distributors of wealth, not producers of it. These occupations all pre-suppose the existence of others around them.

Shall we find this basis in agriculture? Note the small number engaged in this occupation, and as we all know that Massachusetts is not an agricultural State, what she raises in the way of agricultural products must be of an exceptional character, or must owe its existence to exceptional markets created near by. Agriculture, therefore, is wholly dependent upon the existence of other contiguous occupations.

Shall we find this basis of prosperity in this other class of occupations, her servants, embracing over 424,000 of her population? Certainly not; for these persons are in no sense producers. They are those who, unfitted for other occupations, drop to the lowest level of personal service.

Where, then, do we find the basis of Massachusetts prosperity?

Here: with these 316,000 workers in her industrial workshops. They form the principal producers of the wealth of the State.

We have just seen that in industrial manufactures there are two elements — raw material, and skilled labor. As Massachusetts produces no raw materials — save her east wind, which has never yet been utilized in industrial fabrications — it is evident that even her right to an industrial existence rests simply and solely upon her possessing the other element, skilled labor.

This exhibit of occupations, therefore, shows us conclusively that Massachusetts is an industrial State, solely by virtue of her having 316,000 persons possessing certain degrees of skill and taste.

If we were to turn to the capital employed, we should find the productive capital principally invested in two ways, — in manufacture and in agriculture. An examination would show us that the capital invested in the latter is largely dependent upon the existence of the former for its returns.

The figures concerning invested capital are as follows :—

	Capital employed.	Annual Product.
Capital — Industry, . . .	$283,000,000	$593,000,000
Agriculture, . . .	210,000,000	41,000,000

To sum up the whole situation in a word, Massachusetts exists to to-day, as a State, by virtue of her manufacturing or industrial interests. As these interests prosper, other interests in the State prosper; as these decline, all other interests in the State decline, so that you have a community based, so far as its material condition and prosperity are concerned, upon its industrial employments, and able to contribute to these employments but the one single element of skilled labor.

As we are considering this matter in its relation to practical life, and as the statistics clearly show that Massachusetts holds her position among her sister States, by virtue of the labor of 316,000 of her mechanics and artisans, it will be easy to see the important bearing of the public education of the State on their occupations.

Be it remembered, that it is the work of the hands and brains of these men, that holds the other interests of the State together. It is the skill and taste they can infuse into their work, the change they can create in the raw material that capital can bring them, that constitutes the real profit to the capital of the State.

Recognizing this, through the urgent representation to the legislature of some of her most intelligent manufacturers, the State passed a law in the year 1870, that drawing, allowed by all to be the common basis of all industrial education, should be taught to all children in the public schools; also, that all cities and towns having more than ten thousand inhabitants, should provide classes for free instruction in industrial drawing, either in day or evening schools, under the direction of the School Committees.

Here is the Act: —

[Chapter 248, Acts of 1870.]

SECTION 1. The first section of chapter thirty-eight of the General Statutes is hereby amended so as to include Drawing among the branches of learning which are by said section required to be taught in the public schools.

SECTION 2. Any city or town may, and every city and town having more than ten thousand inhabitants, shall annually make provision for giving free instruction in industrial or mechanical drawing to persons over fifteen years of age, either in day or evening schools, under the direction of the school committee.

SECTION 3. This act shall take effect on its passage.

[*Approved May* 16, 1870.

This Act took effect on May 16, 1870. It empowered any town, whatever might be the extent of its population, to establish such evening classes for industrial drawing, and required 23 to do so.

Though many difficulties were encountered in carrying out the law, there was an evident desire to obey it, and the difficulty of finding teachers was met by the State establishing, in 1873, a Normal Art School, for the education of teachers of industrial art. In all this action, there seems to me to have been the greatest economical sagacity. It imposed on the community the task of having drawing taught, and when the cry came that there were no teachers of the subject, it provided the teachers. And the State of Massachusetts, though it may not be doing in all of its parts, what the larger cities in it are doing, will be led in the future, as in the past, by the action of its great centres of population.

The school committee of the City of Boston may be said to have taken a national lead in this matter, one that has been watched and commented on by European nations with much interest. Thus, the French Commission on the educational system of the United States, as shown at the Philadelphia exhibition of 1876, reports as follows:—

"Scarcely six years ago, Massachusetts introduced regular instruction in drawing, and the Northern and Western States are rapidly following her lead. If the last Paris exposition revealed great advances in English industry, due to the art movement developed since 1851, by the South Kensington School, what may we not expect from American activity, stimulated by the Philadelphia exhibition? Everywhere, already, educators are pointing out defects, stimulating emulation, and they find an echo in the teachers of schools, as well as in the employers of labor. France must defend that pre-eminence in art which has heretofore been unquestioned. She has enormous resources which ought to be developed by well-planned primary instruction. With us, as elsewhere, it is not enough to have excellent special teachers of drawing; it is not enough to have good courses and good special schools; but *all teachers, male and female, must be able to give the first instruction in drawing, in daily classes to all their scholars.** France, which has gone to work energetically after her misfortunes, ought to devote herself to the study of drawing, with no less ardor, and reinvigorate her productive powers at the very sources of art."

I might here say, that in the words italicised, France is advised to do what Massachusetts has been doing for some years, and this testimony from such a source, ought to satisfy the theoretical educators who fancy that drawing is a merely "ornamental" study. To "*invigorate the productive powers of a nation at their very sources*," by the teaching of drawing, is not a mere ornamental process, but a highly economical one.

The report goes on to say:—"The South Kensington system, so successfully and skilfully imported into America, by Walter Smith, is likely to render as great service to that country as it has already rendered to England herself."

The report objects to our use of the lead pencil in drawing, and recommends practice with the soft crayon point. But, as a matter of fact, we use both hard and soft points to draw with, and so are more catholic in this matter than either the French or the English.

But its conclusion is very significant. It says, if certain suggestions concerning the processes of drawing were adopted, then "Massachusetts would leap at a single bound to a superiority in art instruction in primary education, to that which the old nations of the European world have hitherto been able to attain. But just as they are, the examples of the primary and grammar school work, shown at Philadelphia, are very satisfactory. When one considers that it represents the fruit of only two years of trial, *it must be admitted that such remarkable results have never before been secured in so short a time.*" *

The works upon which this criticism was made were produced in the public schools of Boston and Massachusetts.

It is refreshing, also, to see that the Boston School Committee has not lost its interest in this great question. In its last report, just issued, occurs the following trenchant and incisive statement:—

"The question of teaching trades in our schools is one of vital importance. If New England would maintain her place as the great industrial centre of the country, she must become to the United States what France is to the rest of Europe:—*the first in taste, the first in design, the first in skilled workmanship.* She must accustom her children from early youth to the use of tools, and give them a thorough training in the mechanic arts."

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* The italics in this passage are mine.—W. S.

That, in my humble opinion, is the most important utterance yet made in this country on the subject of technical education. And if every school committee in the United States would adopt the sentiment and act upon its conclusions, the one great obstacle to the industrial development of the country would soon be removed.

Thus far we have been considering education in Massachusetts as bearing upon the occupations of adult life, in a most important section of the community.

We admitted in the preliminary argument that public education should also tend to good citizenship, and it will be well to inquire what would be practical education for good citizenship in Massachusetts? By good citizenship is included an intelligent use of the franchise, and a ready compliance with the laws promoting social and political order.

Looking again at this classification of occupations in this Massachusetts community of 1,600,000 persons, it will be found that in this body of 316,000 workmen lies the chief danger to social and political order, if danger shall arise.

It is not among those who are employed in trade, agriculture, or the professions, or among the servants of the households, that the State needs to apprehend danger. They are all the servants of the mechanic, by whatever name known, and fear no competition, for they never encounter any, so long as their providers, the mechanics, are in full work, and can employ them. But discontent and hatred of capital are apt to lurk among those who have to do skilled work without possessing much skill, and have to compete with the highly trained artisans of Europe, without ever having had the opportunity of being qualified for the competition.

A man who cannot earn or command of capital more than a dollar a day, has a much stronger hatred of capital than one who can earn three dollars; and one has but to study the labor question conscientiously to see that the more you can increase a man's wage-earning power, by virtue of superior skill and taste, the more you increase his respect for social and political order, and the larger is his stake in their continuance.

So we see that the material, social, and political interests of Massachusetts are centred about her industrial population, and practical education in the State, whether regarded from its bearing upon adult occupation or upon good citizenship, should consist in giving the 300,000 youth of the State an education which should have a strong wage-earning power in industrial occupations. Her commercial, professional, and agricultural occupations have long been provided for in this respect; but until quite recently no particular efforts have been made for the education of her mechanics and artisans in the elements of knowledge which bear directly upon their wage-earning power in adult life.

There are doubtless many among her public men who believe that all industrial education is special in its character, and should be given in special schools only, after general education has been completed and the workman has commenced practical life. This is a view which has been held and abandoned by the most skilled nations in Europe, who have learnt to see by actual experiment the value of teaching the elements of art and science to all their people, from the first day of school life to the last, in the public schools.

There are others among her public men who are awakening to the fact that the future prosperity of the State depends in no small degree upon the skill and the taste which the next generation of artisans can be made to possess.

This is not an occasion, and the time is insufficient, to dwell upon all the educational, material, and political considerations that are presented in this exhibit. I will only add, that no one can study the results displayed in Col. Wright's admirable report, without seeing most conclusively that it is the kind of education given in the public schools of the State for the next few years, that will determine largely her future material, political, and social condition.

I have dwelt upon this practical exhibit in Massachusetts because it seems to me a very instructive one for an educator to study. It gives some excellent material with which to cope with theoretical, sentimental educators on the one hand, and narrow-minded or ignorant tax-payers on the other.

To the educational essayist, who can see in education only a process of intellectual training, and who loves to dwell on the humanities, and all the various aspects of æsthetic culture, and who decries all education that has not for its object the broadening of the intellectual powers of pupils, or disciplining their minds, whatever these terms may mean, these statistics speak a practical admonition indeed. They show that an education directed solely for such purposes would be immediately practical to but comparatively few people in the State, whilst it would be incomplete as a fundamental wage-earning education for the real productive workmen who form so large a part of her adult population.

To the tax-payer, groaning under the expense of the present educational arrangements, and blindly advocating a return to the three R's, this exhibit is equally instructive, for it shows him that education to be practical, — that is, wage-earning, — must be largely industrial; in other words, it must contain certain features for which that which we may call a three-R's power education does not provide at all.

What is true of Massachusetts, is true to a greater or less extent in the Eastern, Middle, and many of the Western States, and will become more true of every State day by day and year by year. Rhode Island, Connecticut, New York, New Jersey, and Pennsylvania are following in precisely the same line of development as Massachusetts, and already their industrial interests are increasing beyond all others; whilst in Ohio, so careful and observant a statesman as General Garfield has pointed out that the State has passed the period of her agricultural development, and her increase in wealth and population is now to be found in her industrial counties.

In this connection I cannot refrain from calling attention to the earnest words of Governor McClellan, of New Jersey, in his recent message, in which he emphasizes the importance of making the public education of the State more industrial in character, to meet the developing wants of the people. Among other things, he says:

"It is now universally recognized that industrial drawing, *i. e.*, drawing as applied to the arts and trades, not landscape drawing, is the basis which underlies the vast majority of the pursuits of our people, and that it can be profitably made a part of the course in our public schools. . . . . We need technical schools in various parts of the State. For instance, in South Jersey one is required in the interests of the glass-makers of that region; in Paterson, they are needed in the interests of the silk and cotton factories, and the great machine-shops of the city. In Trenton, a school is needed immediately for the benefit of the potteries, where boys and girls may be taught modelling, designing, and decorating, as well as the making of pottery itself; for the potteries of Trenton have now reached a point where they daily suffer from the lack of a sufficient number of skilled employés, and if properly encouraged they will soon develop into one of the largest and most important interests of the country."

I might here suggest to Governor McClellan, that if Trenton cannot find a Flaxman to transform her clay into gold, she can at any rate do what Lambeth has done, establish a school of art under trained masters, and thus educate the students employed in her potteries; and the State of New Jersey can make this an equal success by requiring drawing to be taught in her public schools to every child, as Massachusetts has done; thus offering an outlet for the talent of every child, creating a market for her manufactures, and making of Trenton the Lambeth and Etruria of the United States.

By availing themselves of the pioneer action of Massachusetts in creating teachers of industrial art, just as Massachusetts availed herself of the same action taken by England, every State in this Union may, any day it chooses, add the elements of industrial education to the instruction given in her public schools.

The United States has not far to seek for a market for her skilled industries when she possesses them. She is her own market, and one that England and France find very profitable. She has only therefore to reach forth her *hand* and take it; but it must be done by her hand, and not by her head alone.

It was said of old that —

"Nuremberg's hand
Goes through every land."

The time may come, though it can come only in the way I have suggested, when the skilled hand of America may go through every land; and that will be a vast improvement upon keeping our unskilled hands in our own pockets, going through our own purses to pay for our want of skill.

I am well aware that in claiming that public education should be based more than hitherto upon an industrial wage-earning power for the masses, I lay myself open to the criticism of those who hold to certain disciplinary and culture views as main considerations in education. They must, however, allow that at present people are dissatisfied with the education given in the public schools. That is a fact which cannot be ignored, and if we probe the discontent to the bottom, we shall find it rests on the conviction that the education to-day does not sufficiently provide for the adult life of all classes, and in pleading for more attention to industrial skill and taste, I have only indicated a practical remedy which has been found successful elsewhere. If the advocates of *culture above skill* have any more likely remedy to propose, the public will be glad to hear it. I yield to no one in advocacy of the broadest possible æsthetic training in public schools, but I hold it to be our first duty to try and fit our youth to maintain themselves when they arrive at adult age, if need be, by the work of their hands, so as to be prepared for the competition which is pressing harder every day; and thus protect themselves from being superseded by machinery, which is gradually monopolizing all the labor that requires no skill, In face of such developments, the being able only to read, write, and cipher, and to possess a thin film of culture education, are no protection to mechanics, and are not wage-earning to them in the sense in which these acquirements may be to others. I do not wish to be misunderstood on this point. I believe in the fullest development possible for public education; but I hold that we cannot, as sensible men, claim the right to-day to put the needs of the mercantile and professional classes before, and to the exclusion of, the industrial classes.

The interest in industrial education now rising will not die out. It will soon make itself felt in no light manner, and this annual disbursement of $70,000,000 in the Northern States will not be begrudged, when the industrial classes see that their needs are recognized, as well as those of the mercantile and professional classes.

All that the creators of industrial wealth need, and have a right to ask for, is as good a preparation in the public schools, at present existing, or to be established, for their practical life, as all other classes are getting. To them, culture means a knowledge of living arts, whilst to others it may mean a knowledge of dead languages; and there is certainly as good a reason for the existence of the first sort of culture as for the second.

As we turn from the contemplation of particular States and survey the conditions surrounding and permeating this broad American life, with all its possibilities, we have to note that much of our future weal or woe centres about the profitable employment of the industrial classes. Already they hold no small share of political power, and it is in the nature of things that their numbers should greatly increase. At present they are suffering from broad competition on the one hand, and labor-saving machinery on the other, and between this upper and nether millstone, they are apt in their discontent to look upon capital and upon government as their oppressors.

These are facts which educators, economists, and statesmen cannot afford to ignore. The country is getting older; it is rapidly developing the wants and the tastes of older civilizations; and now, having provided for the education of the laborer, the shopkeeper, the merchant, and the professional man, it is time for us to recognize that the day of the mechanic has come at last, and come to stop.

Having dwelt more fully than perhaps I ought to have done, on the general aspect of this question, I wish, in the few moments left to me, to make some suggestions on the second part of my subject — Industrial Drawing.

The term *industrial drawing*, is used to distinguish it from all fanciful or ornamental education, coming under the name of drawing.

It has been introduced into the schools of Massachusetts because, as the chairman of the drawing committee, in Boston, Mr. Charles C. Perkins, says,—

"At least three-quarters of the children in our public schools are destined to get their living in industries which demand a knowledge of drawing. It has a bearing upon the manufacturing interests of the community, and these can only be vivified by the cultivation of public taste. As a matter of material gain, this question of uniting art and industry is now looked upon, all the world over, as paramount."

A French commission, appointed to examine matters pertaining to industrial success, reported, in the year 1863, as follows:—

"Among all the branches of instruction which, in different degrees, from the highest to the lowest grade, can contribute to the technical education of either sex, *drawing, in all its forms and applications, has been unanimously regarded as the one it is most important to make common.*"

I have already quoted the opinion of the French commission of 1876, that "France ought to devote herself to the study of drawing, and reinvigorate her productive powers at the very sources of art."

It it now generally regarded as essentially educational, taught, as it now is, as a workthing, not as a plaything. Let it be stated, that without a knowledge of drawing skilled labor in industry is impossible; and if we remember that what this country stands most in need of to-day is skilled labor, I think that argument on behalf of drawing is unnecessary.

To make it both proficient and popular, it must be taught by the regular teachers in the public schools, in every grade of them, to all pupils. This involves the previous instruction of those teachers, and by this action the cost of introducing the subject into the scheme of instruction is reduced to a minimum. We know this to be practicable, because it has already been done in Boston, and in a large number of the most important cities in the United States.

That the public is interested in the matter is also unquestioned. At the last public exhibition of the drawings made in all the public schools of Boston, more than thirty thousand persons attended the exhibition, in three days, by actual count at the doors.

The regular teachers of the public schools there are now teaching drawing more systematically than it is being taught in all grades of schools in any European country, and are, moreover, producing more originality and executive power in their pupils. And I have good reason for believing that wherever the subject has been equally systematically taught, the results have been equally good.

There are, of course, more ways than that of cultivating public taste, and thereby elevating the industries of the country. But as this subject of drawing lies at the foundation of all technical education, and as it can be easily and efficiently taught at a very nominal expense, this seems the place to begin the introduction of a practical element into public education. Judging from the experience of other countries, as well as the result of what has already been done in this, it seems to me that the following plan is the most economical and successful method by which technical education may be promoted in this country:—

1. That industrial drawing should be taught in the public day schools, as an elementary part of all general education; and that industrial drawing and modelling be taught in free evening classes, to persons of both sexes, who are not in attendance at day schools. To become general, this should be accomplished by an Act of the legislature of each State.

2. That a State Normal Art School, for the training of teachers and designers, be established in each capital city, or other conven-

ient centre, in connection with an industrial museum and art gallery.

3. That the teachers of drawing in normal schools, evening drawing classes, or schools of art, or as supervisors of drawing in public schools, be required to possess the certificate of qualification to act as teachers, awarded, upon examination, by the State Normal Art Schools.

4. That the national government establish, or assist in the establishment of, a great Technical School of Industrial Art, at Washington.

Concerning these proposals, I have only time to summarize briefly. They are not mere theories to meet an imaginary evil, but similar agencies have all been successfully carried out in other countries, and have met with success in correcting great national deficiencies.

It may be objected that there are not in the country sufficient works of art to fill museums and galleries; but to this I would reply that, for a very little money, reproductions of the finest works in the British Museum, the South Kensington Museum, the Louvre, and other great national collections, can be obtained, and are as good, for the purposes of instruction, as the originals.

Besides this, public museums and galleries are like a vacuum — they fill themselves. The empty rooms of a museum, and the bare walls of a picture gallery, have an attractiveness and cohesiveness about them, for works of art in the possession of private persons, that is simply irresistible. The law of gravitation applied to choice works of art, takes them in a straight line into public galleries, when such galleries exist. The owners of such works try, in the first place, to soothe their sense of possession, by *loaning* their treasures to the public: then they make a clean breast of it, and change the loan into a donation or bequest.

That is how the South Kensington Museum and the Louvre have been made the glories of the earth; by a little knowledge of human nature on the part of their projectors.

The proposal to establish normal art schools is not so formidable as it may at first sight appear. They may form a part of one central art school, which every State ought to have, but it should be recognized that we cannot get the most efficient teachers without normal training, whatever may be the manual skill of the art students who offer themselves as teachers.

The French people found this out in 1865.

When the Minister for public instruction required that all applicants for teacherships of drawing in the city of Paris, should be examined before appointment, one hundred and ninety-three applicants offered themselves, and out of these only twenty-seven passed in the artistic, and thirteen in the geometrical subjects. In the next year, out of one hundred and eighty-two candidates who were examined, only thirty were passed. Had it not been for this test, all of these unfit persons might have been appointed.

That was sufficient evidence of the need for a normal school, and one was established at Cluny the same year, by the government.

It has been well said that teachers are not a natural product, nor has private enterprise yet undertaken to produce them; so that if they are to be made, the State must provide them, here as elsewhere.

To establish good normal instruction is also by far the most economical way of diffusing sound education, because by it the whole of the people are reached in time, and in the way that the best experience suggests. Through the normal school may be regulated to a nicety the public education of a State.

Concerning the proposal to establish a central school of industrial art at Washington, one department of which might be for instruction in fine art exclusively, this appears to me to be essential as an example for the whole country, and in order that the treasure-houses of material now existing here for such a purpose, may be utilized and made fruitful. It may be necessary for the protection of this nation, that the sword be kept bright at West Point, but it would conduce as much to its greatness and its glory if the ploughshare were made radiant at Washington.

I cannot close without emphasizing, with the strongest language I can command, that, as educators and political economists, we must look out for the interests of the industrial classes more than has hitherto been done.

In the conflict that is imminent, between aggregated capital on the one hand, and ignorant, unskilled labor on the other, lurks the greatest danger to our whole social and political organism.

It is the province of public education to mitigate, if not entirely remove, these dangers. In view, therefore, of these vast annual expenditures for public instruction, I warn you against ignoring the interests of the industrial classes in education. To the public schools all classes should be taught to look as the very bulwark of their salvation; whilst to the state, these schools should be what embankments are to the Dutch, or what its fleet is to the English people.

A miserable three-R education is neither the one nor the other, in this half of the nineteenth century. In this great industrial battle let us give honor to whom honor is due. The present mayor of Boston recently told the boys confined in the reform school of the city, that if he could bring it about, every one of them should be taught some trade whilst in the school, by which to earn an honest living when they left it. As part of this education, every boy learns industrial drawing, and the same is true of the State Reform School boys at Westborough.

This is done for economical reasons, not for show.

All honor be to the pioneer city and State that have done so much. This, and all the work done for the same reason, by people who are more far-seeing than mere noisy politicians, has been done under fire.

Only a few days since a leading journal in Boston, referring to the geometrical drawing taught in the schools, ignorant of the fact that geometry is the common basis of both fine and industrial art, asks in astonishment, what is the use of this trash? Yet the most distinguished American art critic has deliberately written, that over the door of every workshop in the land, should be printed the old Greek inscription, "*None but the skilled in geometry can enter here.*"

In conclusion, I feel that I have trespassed too much and too long on your indulgence and forbearance, and that my subject has been too much for me, whatever it may have been for you.

If, however, the devotion of a lifetime to this subject has given me the right to speak; if my transatlantic origin and education have enabled me "to see oursels as others see us," then it has not been altogether an unqualified audacity that has brought me here to-night.

This, therefore, must be my apology, that though many of my stiff-necked fellow-countrymen come to this country to idle away their time, and then go home to find fault with its institutions, I have come here to work, and to stay, and to do my share in improving them. And here in my own home and in the home of my children, I have only asserted the Anglo-Saxon right of free speech, which as an American citizen, I feel that I shall never forfeit,—because it is the common inheritance of the English-speaking race.

AFTER discussion upon the paper, the following resolution was passed: —

Whereas, This convention of state, county, and city superintendents of schools, recognizes the necessity of industrial education in the public schools of America; and as, if a part of the time now given to writing in day schools were devoted to drawing, the writing would be better and the power of drawing a clear gain; therefore, —

Resolved, That industrial drawing, consisting of geometrical drawing, freehand drawing, and elementary design, being now regarded as the common basis of technical education, should be taught in the public day schools as an elementary part of all general education; and that industrial drawing, modelling, and applied design for trades and manufactures, should be taught to persons of both sexes, in free evening classes for those who are not in attendance at day schools.

The resolution was referred to the committee of resolutions, and reported back to the convention, after which discussion on the general subject of industrial education followed. In this debate Messrs. Luckey, of Pennsylvania; Hancock, of Ohio; Philbrick, of Boston; and Commissioner Eaton, participated.

The resolution was passed unanimously.

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LECTURE,

BY [illegible]
CHARLES C. PERKINS.

ON DRAWING AS A BRANCH OF GENERAL EDUCATION.

FITCHBURG, JULY 27, 1871.

THAT instruction in Drawing should be considered to be an important branch of general education, appears to me one of those truths which

> " Shine by the side of every path we tread,
> With such a lustre he who runs may read."

There were, however, formerly, many, and those "*non admodum indoctis*," who, as Cicero says about the Romans of his day in regard to philosophy, "did not exactly disapprove of drawing if it were taken up superficially, but who at the same time thought it not worthy of deep study and hard work." At the present time there are comparatively few who are of this opinion; but while this improved condition of the public mind alleviates anxiety as to the future, it rather increases the responsibility of those who are called upon to treat the subject; for it is precisely because the ears of men are opened to catch with favor what may be said, that words should be well considered, so that nothing may be advanced which will not at once commend itself to the intelligent. In the present paper, besides bringing forward such arguments as occurred to me in favor of giving increased facilities for education in drawing to all who desire it, I have made some remarks upon the best methods of instruction, both because the opportunity seemed favorable, and because such a course appeared pertinent to the matter.

As drawing is the basis of architecture and sculpture, and holds the first rank even in painting, these arts are in English collectively called the Arts of Design, and in French, even more significantly named "Les Arts du Dessein." This acknowledgment of the superior importance of drawing in the arts is just, both because it is essential to them all, while color is so but to one, and because it is the language of form. Now, form is superior to color, because it is absolute, while color is relative; it endures while color fades;

there are no two forms exactly alike in the world, while there are many objects which are identical in color. Every form has a meaning *per se*, so that the slightest outline traced by a master hand speaks the thought which dictated it, with unmistakable clearness, to people of every nation and of every clime; while the finest color ever mixed on the palette of a Titian, unless circumscribed by lines, can convey no definite idea to the mind.

Drawing is the one language which mankind has retained in common.

The men of old still speak to us by its aid as plainly as they spoke to each other; and while we puzzle over hieroglyphics and cuneiform inscriptions, and are balked in our efforts to interpret the Etruscan language, we understand their wall paintings and sculptures without effort, and without possibility of mistaking their meaning. Even music is a less universal language than drawing; for while it may be questioned whether we should understand, or be moved by the strains which soothed or stirred the Greeks, it cannot be disputed that the music in which many Eastern nations take pleasure, is but a grief and confusion to ears trained to appreciate sound as divided after the European system.

As compared with any non-ideographic mode of expression, drawing is incomparably concise and explicit. Pages of written character, and long oral explanations, will fail to convey as clear an idea of a triangle as can be given with three strokes of a pencil; and the sketch of any object, made by a tolerable draughtsman, will give a more distinct idea of it to the mind than the longest and most labored explanation. Find a man, for example, who has never seen a horse, and after reading to him the vivid descriptions of Plutarch and Xenophon, show him the frieze of the Parthenon, or the colossal horses of the Monte Cavallo and Rome, and then ask him which is the clearest, — the language of art, or the language in which books are written? There can be little doubt what his answer will be. The witty remark of Talleyrand, that language is intended for the concealment of thought, could never have been made about the language of the pencil, which is not only the most universally understood, and the most clear of all languages, but also the most natural mode of expressing ideas. To paraphrase the words of Varro, we may say, "Divina natura dedit *lineas*, ars humana construxit *linguas*." The Egyptians employed hieroglyphics in a literal sense, long before the alphabet was conceived; nor was it till a later period in their history that they gave them a symbolic or phonetic value, by making the bird express the idea of flight, or stand for the first letter in a royal name. I cannot deny, however, that despite the clear significance of drawing, it would be somewhat troublesome to substitute the pencil for the pen in daily life; but nevertheless, Goethe spoke truth when he said that "we write too much and do not draw enough." meaning that we comparatively neglect one of the most useful and delightful of arts. In pointing out why it is so, we shall find an answer to the question, as to the object of educating the eyes and hands of the million, and shall perceive that in one way or another, men of all classes and conditions have something to gain by learning how to see objects correctly, and how to delineate them accurately. Drawing is a practically useful power, because it teaches men to observe and to express; for it quickens the perceptive faculties, increases the power of the eye, gives cunning to the hand, and makes it the willing servant of the intellect. It may be regarded either as an accomplishment, or as a means of livelihood; either as a means of raising the standard of taste in a community, or of giving skill and knowledge to those of its members whose office it is to minister to taste and refinement by the creation of beautiful forms, whether through fine or industrial art.

It may also be considered in its joint action upon the public and upon those who are to minister to the public needs.

It is by this joint action that it raises all men to a higher level, and maintains the necessary equilibrium in culture between those who buy and those who sell. The public must be capable of appreciating good work, for the supply will soon cease if there be no demand for it. Appreciation is to the spirit what air is to the lungs of the artist and the skilled artisan. If he does not meet with it he soon loses all stimulus to action, insensibly lowers his standard, and sinks gradually to the common level. The great *desideratum*, then, is to educate the public to distinguish between pure form and corrupt form; and this can only be done by familiarizing it with good models, collected in museums and art schools, and by refining the perceptive faculties through instruction. Education in beauty is desirable for all, if beauty is a good in itself; and to be convinced that it is so, we have but to look around us and observe how all things possessing

> "Earth, sea, air,
> Reflect His attributes who placed them there."

From the star to the star-fish, from the mountain to the mole-hill, from the giant oak to the mullein, from man to the worm, we find nothing created without some special beauty which adorns but never conflicts with its special utility. The lesson to be learnt from the great book of nature is, that our works, in humble emulation of those of the Creator, should be beautiful as well as useful, and that while we labor to supply our material wants we should not neglect those of the spirit, and rest contented with ugliness. All may acquire the higher sense in some degree. To those who are gifted by nature it comes more easily, for a fertile soil needs little toil to make it produce abundantly; but even the desert may be made to blossom like the rose if sufficient pains be bestowed upon it. As for drawing, it is as easily taught as reading or writing, and a peculiar genius for the one is no more needed than for the other. Only lately I heard a teacher of wide experience remark that he had never found more than one or two instances where it was impossible, and these arose from physical defects. I do not mean to say that everybody can be made a perfect draughtsman, but that all can be taught to draw a given object in correct proportion, and most people a great deal more; how much more, depends in a greater measure upon the teacher than upon the pupil. The system of teaching pursued, the judicious selection of models, and the proper explanation of them, — these are matters of the greatest importance, all of which lie in the teacher's hands.

A poor teacher, using mediocre models, necessarily produces mediocre pupils; and when once bad habits have been contracted it is almost impossible to eradicate them. Let us consider a moment what sort of teacher is needed in an art-training school which is intended to turn out skilled artisans, and thus have a most important influence upon commerce and manufactures. The pupils are men and women who have had a hard day's work, and who voluntarily undertake this new labor because they feel that what they desire to learn is an essential if they are to become something more than simple mechanics. They want to be taught speedily and easily, for their time is limited, and their minds and bodies fatigued. They need to have such models set before them as are not overcharged with complicated lines or puzzling shadows, and are progressive in respect to difficulties to be overcome.

To produce the desired result, the teacher's method should be vigorous and rapid; it should be calculated to arouse curiosity and awaken interest. He should be ever ready to explain the model: as, for instance, if it be a flat copy of a head, he should point out what its position is; why this part is in shadow, and that in light; and then show them in a living model how the light falls upon parts, according as they are in high or low relief, or rough or smooth texture; and why shadow falls according to the angle of light. He should teach them how to seize the "ensemble" of any natural object, by broadly rendering the masses of light and shade.

The inevitable tendency of a beginner being to lose himself in non essential details, he can never perceive this by himself, wherefore the teacher's best service is to spare him fruitless labor, which will speedily exhaust the sturdiest patience.

Those who are conversant with the English and French systems employed in art schools, generally agree that the French is more speedy in its results and more interesting to the pupil. The English student aims at accuracy of outline. "He is required," says an eminent art master,* "to begin his efforts to represent form as it is never seen by the eye, conventional, expressionless, and requiring precision at a time when it is vain to expect it. The wiry line does not exist in nature." Outlines are fugitive; they melt into the air without sharpness, and the attempt to fix them in a sharply defined contour must result in more or less of incorrectness.

Outline drawing is indeed of the greatest importance, and cannot be too much insisted on in advanced stages; but it is important that the beginner should not be wearied by being kept too long at work over mere geometric front elevations of forms without shadow and without color, as is often the case in English schools. He should first be taught proportion, and exercised upon elementary forms. His first attempts at shading should be of a sketchy character; emphasis should be given by varying the thickness of lines, and by oppositions of light and shade marked in broad and not too labored masses. Now it is far easier for the pupil to effect this with chalk and charcoal than with any hard point, and these are the materials which are used in French schools. The aim in France is "to get the greatest amount of the common element of art into artisans during the short time they are under instruction, and not to turn out professional artists."

Drawing is the alpha and the omega in French schools. "The same principles of absolute imitation in masses and contrasts of light and shade of forms presented to the eye is kept in view, and the same medium, chalk or charcoal, is employed by beginners and advanced pupils."

The instrument put into the hands of a beginner has a very important influence upon his future tendencies: if it be sharp and hard, it leads to a taste for correctness and hardness of line; if it be soft and easily handled, it inspires a taste for effect and harmony. It would be interesting to illustrate this remark by a careful survey of schools from antiquity to the present day. Here, I can only do so very superficially; but even this may be enough to show its truth. We know very little about the methods of teaching followed in ancient times, but this little seems to show that there was formerly a much closer connection between drawing and the use of color than exists at the present day.

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* Mr. Walter Smith, State Director of Art Education, Massachusetts.

The young Greek art student drew upon a block of box-wood, with a material whose marks could be easily effaced with a sponge. It would appear, also, that the brush was much more in favor than the hard point. The outlines of figures upon painted vases were sometimes, it is true, scratched upon the clay with a pointed instrument, but generally they were traced with a brush of color very dexterously handled. Apelles and Protogenes, in their famous contest of skill at Rhodes, made use of the same subtle and flexible implement, which, though the most difficult of all to handle, surpasses all others in delicacy.

In the great Italian schools, we find the choice of instruments dictated by the predilection of each for form or color. Thus, in the Florentine, studies were generally made with the pen or the silver point; while in the Venetian, soft chalks and washes were generally preferred. If Titian used the pen, it had a broad nib, which produced thickish outlines and broad-lined hatching Raphael, on the contrary, made finer strokes with a harder medium, and when he wished to emphasize, did so by a multiplicity of closely contiguous lines and by varieties of thickness. It does not, however, appear that the hard point makes the better draughtsman in all cases, for we find that France, where charcoal is put into the hands of students, produces better draughtsmen than England, where a natural love of color ought logically to have led to the use of the softer instrument. The advantage of charcoal lies perhaps in its being so easily effaced. No scholar is afraid of making mistakes, if he knows that he can efface them with a sweep of the handkerchief; he therefore proceeds boldly, acquires confidence in himself and a freedom of hand which he will carry with him when he takes a pen or a hard pencil in hand.

I said that a knowledge of drawing is a useful acquisition to all men, and that it may be regarded either as an accomplishment or as a means of livelihood. To prove this, I propose to speak of the traveller, to whom it is generally useful, and of the artisan, to whom it is specially important. I need not speak of the artist, whose case is self-demonstrable. Drawing is the essential element of his profession, for without a knowledge of it there can be no such thing as an architect, sculptor, or painter. No brilliancy of color can atone for feebleness of drawing in a picture, nor can the utmost technical skill make up for defective proportions in a statue, any more than splendor of imagery or richness of fancy can condone faults against grammar in a poem. Wherefore, a man can no more be an artist without the knowledge of the one, than he can be a poet without the knowledge of the other. Men can, however, be travellers, or artisans, without knowing how to draw, though in both it is an immeasurable advantage. The traveller who can use his pencil, happily fills up many hours which else might hang heavy on his hands, and besides the mere pleasure which he derives from it at the moment, carries with him an invaluable aid to memory. If travelling, by which I do not mean the mere process of getting over a given portion of the earth's surface in a given space of time, is profitable to any one, it is so because it widens the mind by teaching us to know the manners, customs, and arts of many nations, and the countries which they inhabit. Whatever, then, helps to fix these things in our minds, and to recall them to us in after life, is eminently useful to us.

And this is what drawing does. "Thrice is he armed" who can use the pencil to illustrate, as well as the pen and tongue to describe, whatever of interest he has seen in foreign lands; but of the three instruments, the pencil is the most effective: for though he may talk and read to his friends for hours on his return home, it is to his sketch book that he will turn if he would make them realize the aspect of some striking scene in nature, or bring it vividly back to his own mind. As he turns over its pages, many a forgotten incident comes back to him. This sketch of an old castle recalls to him its history and the legends connected with it; and the black lines which mark the little pathway from its crumbling portals to the river, remind him how he descended by it and took boat in the gathering twilight, listening as he crossed the stream to the solemn chants of the monks in the old convent on the opposite bank. Is our traveller an archæologist? then he will have pages filled with invaluable records of objects of interest seen in foreign museums Does he love painting? then he will have made pencilled notes of many a masterpiece; or, is his taste architectural, have sketched many a portal, tower, or shrine. In short, whatever his tastes may be, he will have provided material for their renewed gratification, and will not have travelled in vain. If a knowledge of drawing be essential to the artist, and thus valuable to the traveller, what is it to the artisan? The answer to this question is contained in the proper definition of a skilled artisan. A skilled artisan is a mechanic who knows how to draw, and who, thanks to such knowledge, has quadrupled the value of his labor to himself and to the State.

In ancient times, in the middle ages, and the renaissance period, the relations between free and industrial art were of the closest character. Then the artist did not disdain to be an artisan, nor the mechanic neglect to make himself something of an artist. Almost all the great Florentine artists of the fifteenth and sixteenth centuries were apprenticed to the goldsmith's trade in their youth. Orgagna, Ghiberti, Pollajuolo, Francia, and many others of equal renown, owed to this the exquisite skill and delicacy of hand for which they were distinguished. Ghiberti, having modelled the gates of Paradise, made a cope button for the Pope; Raphael, after painting the Spanze of the Vatican, designed the cartoons for the tapestries which were to be woven in the looms of Arras; Cellini modelled statues for Duke Cosmo de' Medici, and chiselled cups and salt-cellars for King Francis I. These great artists were not only skilled in fine arts, but they understood the technical processes of all the industrial arts, and thus designed objects with due regard to the material in which they were to be made. These designs were in many cases carried out by workmen scarcely less artists than themselves: men whose taste was elevated by constant familiarity with good design; men who understood the principles of beauty embodied in these designs, and who therefore worked them out with a pleasure of which their modern representatives have no idea. When their work was done, it met with such ready appreciation that they were stimulated to renewed efforts.

The Athenians in the days of Phidias, and the Florentines in the days of the Medici, recognized and appreciated good work, and their good opinion was sought by the greatest artists. Phidias, we are told, concealed himself behind a door of the temple when he had finished his colossal Jupiter, that he might profit by the criticisms of the crowd. The Greeks, as Cicero tells us in one of his Verrine orations, dearly loved and valued the fine works of art with which their temples and towns were decorated, and this not only on account of religious feeling. Believe me, he says, that nothing has so deeply afflicted them as the system of spoliation of works of art carried on by our generals; nor has any city in all Asia Minor or Greece ever voluntarily sold a picture or a statue, or any such like ornament. Even the Romans, whose indifference to art the great orator here contrasts with the Greek enthusiasm, could not bear to lose the sight of a fine work to which they had become accustomed.

Thus, when Tiberius removed the statue of the Strigillarius, by Lysippus, from the public circus to his own palace, they raised such a tumult that he was forced to restore it to the public gaze. The separation between art and industry in modern times has greatly lowered the general standard. Now, when each pursues a separate path, both the public and the workman are indifferent to the artistic beauty of cups and pitchers and chairs and tables, and regard them solely as objects of use. All that the public desire is that they should be strong and serviceable, and it is to this object that the workman adapts himself. The modern point of view which he takes is totally opposed to that taken by his ancient prototype. Imagine the confusion of a modern potter suddenly transported to Athens in the olden time, and required to treat his ware from the standpoint of the "Hand Kings" of the Kerameikos; or the consternation of an Athenian artisan of the time of Phidias, at finding himself set down in a modern city, where, instead of the fictile vases whose form and decoration made the cheap terra-cotta out of which they were fashioned more precious than gold or rubies, he would see vulgar shapes and ugly forms perpetuated in silver! The wish of Pindar, "Oh, may the gods give me the love of beautiful things," had been granted to such as he, and ugliness had become as intolerable to him as vice to Socrates or Plato

In order to bring back in some degree the old state of things, the men who are interested in art education at the present time seek to raise industry from the low trade level to which it fell, when the manufacturer arose and separated it from its legitimate companion. France, where the separation has never been so absolute as in other countries, has always held a superior position in regard to matters of taste. The establishment of those great national workshops, the manufactories of porcelain at Sevres, and of Gobelin tapestry and carpets at Paris, fostered the taste of designers, whose *status* was raised because artists were employed there, and private manufacturers sought their aid. The royal manufactories of porcelain, established in Germany at Meissen and elsewhere, and the manufactory for the weaving of tapestry at Arras, in Flanders, acted in the same way; but in England, with the exception of the attempt made by Charles I. to introduce tapestry weaving at Mortlake, the government did not endeavor to cultivate public taste, by itself becoming a manufacturer, until the days of Prince Albert. The wide separation of the great centres of industry in England from the capital, where artists naturally congregate, hindered the union of art and industry which was favored by the centralization of artistic life at Paris. The central action of the Kensington Museum, through the Art Schools connected with it all over the United Kingdom, has given a wonderful impulse in the right direction; and individual effort, such as that made by Morris and his associates, to shape public taste, by offering good designs for household articles, tends to the renewal of that old bond between the studio and the manufactory, in which lies our hope for the future.

Let us now briefly consider what the mechanic wants to learn in the art school. As the great object is to enable him to master form in his own mind, so that he may be able to conceive whatever shape he may have to make or work with, and to understand working plans, he should not only be taught to draw with accuracy any object which is set before him, but also to reproduce it when it has been removed from his sight. Thus his memory will be strengthened, and his mind filled with valuable ideas. He must be taught the use of instruments; learn something of perspective, and something of geometry; for, as some one has said, the old Greek inscription, "None but the skilled in geometry can enter here," ought to be written over the door of every workshop.

To artisans of one class, machine drawing is most important; for without it a man cannot understand the whole of any work of which a portion has been assigned to him, and this he ought to do, because his work is destined to fit the work of his fellows. Artisans of another class — decorators, for example — must master the principles of ornament, be able to draw it correctly, have their taste elevated by a comparison of styles, and even learn how to draw the human figure, which is often needed in decorative work to save it from monotony and insipidity.

If it be asked why a skilled artisan is better than a common mechanic, I answer, because labor controlled by scientific knowledge is incomparably more valuable, both nationally and individually, than mere labor unaffected by these influences. The close connection between general excellence of workmanship in the mechanical trades and the scientific education of artisans, makes it most desirable that it should be given to them, both for their own sakes and for the sake of the community of which they form a part. The eagerness which our mechanics have shown to enter the free drawing classes opened at the expense of the State during the past year, clearly proves that the desire for instruction is not wanting on their part. One thousand applicants presented themselves for admission within a week after the classes were announced at Boston; and at Worcester, as Prof. Thompson has told us in a valuable paper prepared for the Social Science Association, thirty applicants only were expected, and two hundred presented themselves. These men came because they were convinced that what they would learn would increase the value of their labor; or, in other words, that acquired skill would assure them higher wages in the workshop. If they knew how much is done for their brethren in England and France, they would feel that they have hitherto been sadly neglected. Read the remarks of the deputation of artisans which was sent over to France by the Society of Arts, to report upon the great exhibition, and you will see that with all that has been and is being done for them in England, they found reason to draw a sharp contrast between their own position at home and that of French artisans, in respect to advantages for instruction. If they complained, what would a similar body of American artisans have done, who are as much more poorly cared for than the English as the English are than the French?

One of the most striking characteristics of the French designer is, his constant endeavor to profit by the past. He knows that novelty is seldom anything but recombination, and he therefore seeks to familiarize himself with works of all periods and styles. He is lost when he gets out of their influence, and every day feels his inventive powers becoming weaker. Ask him why our artisans are unartistic and unimaginative, and he will tell you that it is because they have no such stimulus to excite their artistic faculties, or warm their imaginations, as he has in his museums and art schools, and in the pervading atmosphere of taste which surrounds him. So far from wondering at their condition, he will ask you if birds can fly where there is no air, or fishes swim without water.

Our artisans want something to see, something to study; and until we give it to them we cannot expect them to make progress. When we have done so, and have taught them how to draw, we may hope to bring about that fruitful union of art and industry which once produced such wonderful results. Then the artist was both poet and artisan, and the artisan both artist and mechanic, and thus it should ever be. Though the Alp has its sublime solitudes, its base, which is firmly planted on the earth, is surrounded by green valleys whose waving fields of corn give sustenance to thousands. These are nourished by the clouds which gather about the mountain top and fall upon them in showers, and descend upon them in waterfalls with fertilizing power. So art, whose realm is the cloud-land of poetry, should pour down a beneficient and elevating influence upon industry.

Since this lecture was delivered, eight years ago, much has been done in Massachusetts to prepare the way for that fruitful union of art and industry alluded to in the last paragraph. In 1871, the State had taken the first steps in an organized system of art education, which aims, in her public day schools, to train children to see and render simple forms accurately, by giving them instruction in drawing on a geometrical basis; and in her free evening drawing schools, to form skilled artisans out of common mechanics, by teaching them the principles of machine and building construction, and the application of elements of beauty to articles of every-day use. Each year, as the means employed have been better adapted to the end in view, and courses of study have been better systematized, the work done in the Boston drawing schools has improved, and their usefulness has been more generally acknowledged. In the classes for free-hand and cast drawing, the advantages of the French system of stump and charcoal over the English system of working out labored outlines with the hard point of the pencil, advantages which were explained by Mr. Walter Smith, in his report on the French Schools of Art, made by direction of the British Government so long ago as 1863, have been tested, and few now doubt that greater facility of hand and a better comprehension of light and shade are thus attained. That the Director of Drawing should have adopted views so opposed to those of the school in which he was educated, speaks for his freedom from prejudice, and his fitness for his present position; but lest it may be thought that the use of the pencil and the compasses in the day schools, which he has authorized, conflicts with his practice elsewhere, it may be well to explain that this is not the case. The object in the day schools is one which recommends the use of the hard point as tending to the early promotion of habits of exactness, and as being both more convenient and more cleanly. Furthermore, no provision being made in the grammar schools for the study of light and shade, the teaching of the elements of form and design in outline is alone possible, and for this charcoal and stump are unsuited. The reason why the present system of drawing has taken such firm root in our public schools is because it is so well adapted to attainable ends. It is not pretentiously artistic, and therefore sure to excite opposition as being out of the proper province of a common-school education; but is, like writing, plainly and practically useful to every child, being sure to strengthen his hands in any future occupation of life. CHARLES C. PERKINS.

BOSTON, Feb. 16, 1879.

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